Australian Consumers' Association
September 1993

CHOICE

POWER TO THE PEOPLE
Renewable energy comes close to home

FOR THE TERM OF YOUR NATURAL LIFE
Which life insurance policies are the best?

VITAMINS AND MINERALS
Are you eating enough of them?

Washing machines

Water filters update

Car batteries

CHOICE

The magazine of the Australian Consumers' Association ACN 000 281 925
The Australian Consumers' Association exists to assist and empower consumers.
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All products tested for CHOICE are bought randomly in the marketplace and no samples are accepted. Evaluations are based on tests, trials and expert judgments as appropriate. These findings should not be applied to models other than those nominated in CHOICE. We do not necessarily evaluate every available product or service in a particular class. We check the results of our tests just before publication with manufacturers, but specifications and quality may vary. If this issue is no longer current check with us or the manufacturer to determine if important changes have taken place before you buy. If, despite our extensive checking, a mistake slips through we will publish a correction as soon as possible.

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The Association is managed on a day-to-day basis by a committee comprising the four department managers and a staff-elected representative.

Editorial

WHAT IS IT about washing machines that makes manufacturers go model crazy? There are close to 100 on the Australian market — I can't think of any other product that has so many models that do essentially the same thing. It's not as if they're particularly high-tech beasts — although in the last few years electronics has finally met the humble washer and some at least have stopped looking like a throwback to the 1940s.

Of course many of these models are simply clones of other models with certain features or wash programs added, so we don't have to test them all to bring you their performance ratings. We do have to include them all in our report, however, so you know the score when you're confronted with yet another Galaxy or Concorde in the shop. In the case of our latest report on washing machines (which starts on page 39), this means we're giving you 18 separate bits of information in the table about each of 79 machines — that's over 1400 pieces of info we have to get right before we can even start to tell you what the information means! As you can imagine, it's not our verifiers' favourite test.

We test washing machines at least once a year to try to keep up with new and modified models continually coming onto the market, but sometimes our buying deadlines mean we miss a model subscribers are particularly interested in when it's first released. Fisher & Paykel would be highly gratified to know the amount of mail and phone calls we received after our last test when this happened with their three new models! We're sorry it inconveniences subscribers when this occurs, but if we waited to catch every new model on the market we'd never publish a report at all — blame the manufacturers for their fast model turnover, not us. And yes, the F&P models *are* in this test.

We faced a similar information overload for our review of life insurance policies (starting on page 17). Reading, evaluating and comparing the minutiae of hundreds of different clauses, definitions and exclusions in 22 life insurance policies to come up with our recommendations taxed the stamina of even our most stalwart staff. Aren't you glad you've got CHOICE to do it for you?

Jane Mackenzie
Editor

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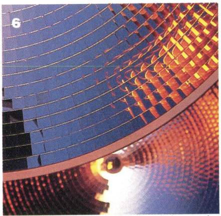

Cover photo: Solar collecting dishes at the White Cliffs experimental power station. Courtesy NSW Office of Energy.

Next issue
Disposable nappies, wall oven update, vacuum cleaners, alternative medicine, house and contents insurance, buying a secondhand car, small appliance life, insurance disputes schemes reviewed.

November, December, January
Tests: Petrol lawnmowers, telephones, drinks coolers, cockroach killers, video game systems, cask wine, gourmet brie, electric fans, CHOICE's annual buying guide, fridges, car security locks, blenders.
Features: Mortgage options, dental care, energy options for home renovation, questions on child care, 'junk' insurance, how private is personal information?, real estate fees, domestic air travel, appliance servicing, the food information overload.

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The answer is 'pretty close', and in some cases we're there already. We review potential sources of renewable energy and how near some of them are to arriving in our homes.

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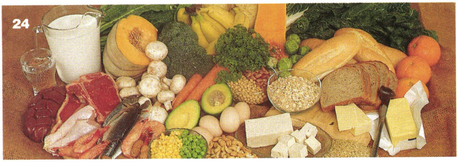
Who needs life insurance, what kind do you need, and which are the best policies? This report answers all these questions.

24 Getting the most from your vitamins and minerals
How easy is it to get enough vitamins and minerals? Will eating more than the recommended levels protect you against disease? Are Australians likely to be deficient in any of them? Subscribers asked us these and other questions — here are the answers.



34 Security screen doors
When is a screen door secure and when is it just a flyscreen? We show you what to look and ask for if you want a genuine security screen door.

Tests

11 Water filters revisited
We've added a popular extra model to the report first published in February this year.

31 Car batteries
This test of batteries for cars like Camrys and six-cylinder Commodores and Falcons only found one dud.

39 Automatic washing machines
Our latest update of the washing machine market, with 79 models in this report. And yes — this time the Fisher & Paykel machines *are* included!

Departments

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Another diet rip-off; a new grain; credit card confusion; children's safety in car accidents; smaller can, higher price; half-baked bread labelling standard.

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A flame-retarding spray works — but don't believe its claims about replacing your other fire prevention measures.

47 What do you know?
Test yourself with our regular consumer quiz.

CHOICE CUTS

Weight loss

LATEST DIET RIP-OFF

"Have you been invited recently to participate in the most incredible weight loss campaign ever to be launched in your country?"

SO ASKS Dr Watson Walden from Florida in an official-looking unsolicited mail offer to Australian consumers. Weight loss is easy with an "amazing formula available in a proven product called ThermoSlim", says the good doctor.

If you've received any paraphernalia in the mail lately about ThermoSlim, which is being distributed in Australia by International Weight Loss Specialists of Alexandria, NSW, treat it as just what it says — incredible.

Chewing ThermoSlim pills is supposed to start a process called thermogenesis, which involves "igniting your internal body heat at a tremendous rate. This heat will push your body's calorie and fat burning ability into high gear, very high gear" stimulating the "rapid-fire burning of millions of fat cells".

The unsolicited mail asking consumers to send money to buy ThermoSlim promises rapid, exercise-free and hunger-free weight loss. The claims are supported by testimonials from people who have supposedly changed their lives thanks to ThermoSlim.

Our advice? Don't send money away to purchase ThermoSlim or any other dieting product that promises to burn up your fat while you sit around and continue to eat whatever you want. Healthy weight control can only be achieved by following a sensible and balanced diet combined with regular exercise.

BEFORE
SLUGGISH METABOLISM
AFTER
BODY'S FAT BURNING ABILITY IN HIGH GEAR
BLAM!
LIFE TOTALLY CHANGED
mik

Food

ANOTHER DAY ANOTHER GRAIN

AFTER our June article on *Grains and cereals*, Dr Kath Cooper from the University of Adelaide wrote to inform us of a grain we missed.

Triticale is a relatively new species of grain produced by hybridising wheat (genus *Triticum*) and rye (genus *Secale*). It has been grown commercially in Australia for at least 15 years and although most is used for stock feed, some companies supply triticale to the health food market.

The whole grains can be sprouted or cooked like wheat and barley and the flakes used in muesli, porridge, biscuits or just nibbled as a snack. The flour can be used much like wheat in baking. It is best mixed with wheat flour of bread-making quality for yeast-raising recipes.

Versatile triticale — cook with it, munch it, or feed it to your horse.

Finance

CREDIT CARD CONFUSION

CONSUMERS ARE confused about how the introduction of credit card fees will affect the cost of their cards, according to a recent study of CHOICE subscribers.

We interviewed 82 subscribers to gauge opinions about the imminent introduction of credit card fees. As part of the study, participants were set a problem to see how well they would handle the variables of interest rates, interest-free periods and fees.

We wanted to get an idea of how able consumers are to make an informed choice. The problem involved a purchase for $1000 which the consumer wished to pay off over a year. She or he had to determine which of the following three card options would be best:

- Upfront fee $30, interest rate 15%, up to 55 days interest-free
- Upfront fee $50, interest rate 13%, no interest-free period, or
- Upfront fee nil, interest rate 18%, up to 42 days interest-free.

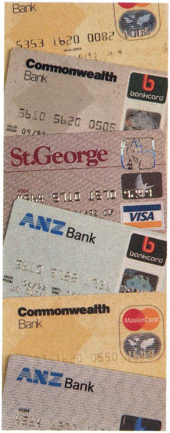
Assuming the amount outstanding is paid off evenly over the year, the third option is the cheapest, but only a quarter of the people interviewed were able to pick it. Given that most of the participants in the study either had university education or had done training of some sort after school, this result raises doubts about the ability of many consumers to pick the best credit card deal once fees are introduced.

As for the group's opinions on the introduction of fees, the majority of our sample usually paid their bills on time, and not surprisingly most of them were opposed to the Commonwealth Government's decision to allow banks to charge an annual credit card fee because it would cost them more. Of those who left an amount unpaid, opinion was fairly evenly divided: some were in favour, some against, and some said it depended on the fees and rates charged. Overall, just over one in six was in favour.

Also featuring were the views that credit cards provide enough revenue to card providers already, and that while interest rates may be lowered initially as agreed, they may increase again later on.

Those not in favour of upfront fees were asked if and how their card use might change when they were in place. Two thirds believed they *would* change the way they used their cards, the majority saying they'd get rid of multiple cards, keeping only one.

To help you calculate when genuine savings might be possible with fees and reduced interest rates, and how much a credit card costs you if you don't pay off the balance, refer to the two calculation tables in our *Credit cards* article on pages 17 and 18 of the February 1993 issue.



Most people don't find it any easier to work out their cheapest credit card option with upfront fees — so much for 'increased competition' benefiting consumers.

Can you help?

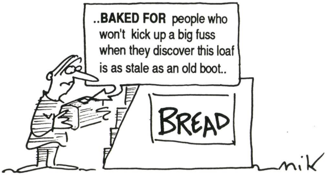
SELLING YOUR HOME

WE'RE planning an article on the fees charged by real estate agents for selling homes. Have you had any hassles in this area, or been pleasantly surprised? Did your estate agency clearly spell out what you would receive for the fee charged? Did it deliver? If you can remember, we'd like to know what you were charged overall, and for individual items such as auction fee, photography, 'for sale' sign, advertising, etc.

Alternatively, have you bought or sold a home without going through an estate agent? Were you happy with the result, or was it not worth the extra effort? How much work was involved? Did everything go smoothly?

If you've had an experience you'd like to tell us about, please write to **Real estate fees**, CHOICE, 57 Carrington Road, Marrickville 2204, by September 30. Thanks for your help.

Labelling


..BAKED FOR people who won't kick up a big fuss when they discover this loaf is as stale as an old boot..
BREAD
nik

HALF-BAKED STANDARD

WOULD you rather know what date your bread was baked *on*, baked *for*, packed or should be used by? At present all these terms can be used on bread labels, because the food labelling Standard allows the states and territories to determine their own date-marking schemes for bread, meat, milk and cream.

The National Food Authority is considering a change in the Standard relating to the date-marking of food with the aim of removing such labelling differences, and we'd certainly agree there's no conceivable good reason why the states should differ in this regard (or most others, come to that). However, the Standard as proposed won't necessarily make things more uniform.

The paragraph allowing states and territories to determine their own labelling is set to go, but four different date-marking schemes are still proposed: the date of packing, the use-by date, the date of baking or the date it's baked for (provided that date is no longer than 12 hours after the actual time of baking). We can't see any justification for not making the labelling more clear-cut than this, and some of the suggestions have obvious limitations.

For most breads, a use-by date is irrelevant: consumers aren't concerned it might have gone off, they simply want to know when it's at its freshest. And a packing date only serves to get across the idea that the manufacturer doesn't want to tell us when it's baked because it's earlier than when it was packed.

The 'baked for' terminology was requested because bakers' shifts span midnight and it seems meaningless to have bread baked just before midnight marked with a different date from that baked just after. However, the Consumers' Association feels this term can be confusing, and that 'baked on' is much more clear-cut and understandable.

We have suggested 'baked on' be the only term allowed and the definition be altered to include bread baked after 10 pm the previous day.

If you'd like to air your views about the date-marking of bread, write directly to the Standards Liaison Officer, National Food Authority, GPO Box 7186, Canberra ACT 2610, by September 30.

Car safety

CHILDREN IN CAR ACCIDENTS

A STUDY conducted by the Child Accident Prevention Foundation of Australia (CAPFA) is finding a high number of children (up to the age of 14) killed or seriously injured in car accidents are not using any kind of seat restraint. It also shows if a proper child restraint is not available then an adult seatbelt is clearly better than nothing. The study won't be completed until January next year, but preliminary results for 140 children involved in car accidents in NSW have found:

- Only a quarter of the children in the study so far were wearing proper child restraints. None of them was killed or seriously injured.
- Around a half were wearing adult seatbelts and 20% of these were killed or seriously injured.
- For the 20% of children who weren't restrained at all, the figures were much worse. Around 60% were killed or seriously injured.

The results also indicate that if a young child is forced to use an adult seatbelt, the three-point lap-sash belts provide greater protection than the simple lap belts usually found in the centre of the rear seat. Project manager Dr Michael Henderson said, "In lap belts alone, children appear to be vulnerable to head and facial injuries. Children's heads are heavy in proportion to their bodies, so on impact the weight of the head propels the body forward, more so than with an adult, impacting the structures in front of them."

The investigators try to gather as much information as possible about each accident, so the results are more than just statistics. Dr Henderson highlighted a couple of cases. One involved a baby being thrown from its mother's arms during a rollover accident and being killed while the two adults in the car survived. Another was a high-speed crash into a tree that resulted in an adult being killed but left a properly restrained child virtually unscathed.

If a proper child restraint isn't available an adult seatbelt is much safer than no restraint at all.

Packaging

BIGGER, NOT MORE

YET ANOTHER example of deceptive packaging has been brought to our attention by Colin Wiley from Bexley, NSW.

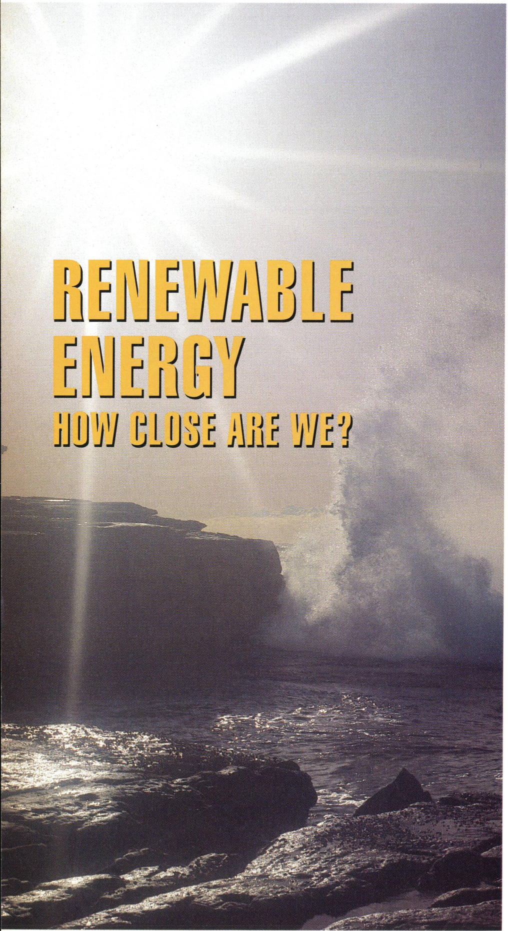
Colin had used Enfalac (with reduced iron) infant formula for his last two children. He couldn't believe it when recently the manufacturer changed to a bigger can size — but with less in it (from 1 kg back to 900 g) and for a higher price!

"The bigger can with less in it is only about two thirds full," says Colin. "It's hard to believe that after all these years the manufacturing process needs the bigger can (the usual excuse for oversized packaging)."

According to Enfalac manufacturer Mead Johnson, most infant formula manufacturers have been moving from 1 kg to 900 g cans. The company says the wholesale price of the product has not changed but it has no control over pharmacies, which may mark up their prices. A can with less in it for the same wholesale price is, however, a price rise. Consumers are not even in a position to register their complaint by switching brands as it may upset their infant's diet. Given its captive market, this industry should be more ethical.

Enfalac
WITH REDUCED IRON
INFANT FORMULA SUITABLE FROM BIRTH
POWDER
NET 1 kg
Mead Johnson
IMPROVED FORMULATION
Enfalac
WITH REDUCED IRON
INFANT FORMULA SUITABLE FROM BIRTH
POWDER
900 g NET
Mead Johnson

Bigger can, less contents, higher price — explain that!



RENEWABLE ENERGY

HOW CLOSE ARE WE?

Where's research heading, and what's already available to consumers?

RENEWABLE ENERGY — energy from resources that won't diminish or can be replaced as we use them — has always been available, some sources in abundant supply. For example, there's enough energy in a few minutes of sunlight to supply our heat, power and transportation needs for a whole year.

What's been missing is the technology to extract it efficiently and cheaply, but this may not be too far away. Research and development of renewable energy technologies have advanced steadily over the last decade, and a wide range of applications is already in use.

The need for greater use of renewable energy is clear. The fossil fuels currently providing most of our home energy needs are finite resources — they will eventually run out — and are also significant polluters. Burning coal and natural gas to generate electricity in Australia contributes almost half our annual emissions of carbon dioxide (CO_2), the major greenhouse gas.

Switching to power stations run by sources of renewable energy — solar or wind, for example, which have very low environmental impacts — would greatly reduce this. Some experts believe it will be impossible to stabilise the greenhouse effect without doing so. Also, unless renewable technologies become widely used in developing countries as well, their greenhouse gas emissions will increase by very large factors, swamping any reductions made by developed countries such as Australia.

About 11% of Australia's electricity demand is currently met by renewable energy sources, mostly through hydroelectric schemes. But we have access to vast resources of other renewable energy. Solar energy is by far the most abundant here: the average amount we receive is 15 000 times our current energy use.

The technology to generate electricity on a large scale using solar power is already highly developed, and other renewable energy sources also have potential for this, including wind, biomass, tidal, wave and geothermal. These are discussed in more detail in *What are the options?* right and overleaf.

Making it affordable

It would cost significantly more money at present to produce the bulk of our electricity from renewable sources than from burning fossil fuels. This is partly because using these fuels is very cheap in Australia. We have large reserves of coal and natural gas so the fuels themselves are cheaper than in other countries, and the environmental cost of generating electricity by burning them isn't reflected in its price. However, the cost of renewable technologies has come down dramatically in the last decade and technical performance has improved. As much development work is still being done, it seems certain this trend will continue.

On a more local scale, renewable energy is being widely used and there are great opportunities for this to increase. Much of Australia, especially WA and the NT, either isn't connected to an electricity grid or is supplied by large 'diesel grids'. This means electricity is relatively expensive to produce in these areas, so existing renewable energy technologies can already compete economically.

For example, in the NT it can currently cost more than a dollar per kilowatt hour (kWh) to generate electricity in remote Aboriginal communities and around 19 cents per kWh in main centres. In comparison, in other states — where abundant supplies of low-cost coal or natural gas are relatively close at hand and much larger economies of scale exist — the average cost is five to six cents per kWh.

This situation creates a large potential market to help renewable energy technologies take off commercially and continue to develop. There's also huge export potential. Only 10% of the world's population is supplied by electricity grids; in Asia alone there are some two billion homes not connected to grids. The economic and geographic conditions in many parts of Asia mean small-scale renewable energy power supplies are appropriate and the most affordable.

What's already available

In Australia, renewable energy technology is commercially available to generate electricity and to power appliances and machinery directly.

For people connected to electricity grids, the latter type are of main interest. Solar hot water heaters are technologically very advanced and have been commercially available in Australia for around 40 years. Their technical performance has improved significantly

Electricity from wind energy: this wind generator has supplied electricity on an experimental basis since 1986.

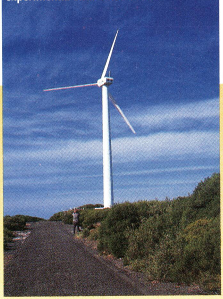


Photo: NSW Office of Energy

WHAT ARE THE OPTIONS?

BIOMASS

Organic matter can be a source of energy when it is burnt or used to produce alcohol or gas ('biogas') fuels. Crops, crop residues and animal and human waste are currently being used to provide a range of energy forms; for example:

- In Queensland, sugar cane waste (bagasse) is being burnt to power some sugar mills, and could be used to fuel small power stations.
- Bagasse and, in NSW, wheat starch (left over after the protein, gluten, has been extracted) are being used to produce ethanol, an alcohol fuel. (Many different plant materials can be used.) Ethanol can be mixed with petrol or diesel to run existing motor vehicles and used to run other engines. In a 1-to-10 ratio with petrol or 3-to-20 with diesel, engines don't need to be modified, and carbon monoxide and CO_2 emissions can be reduced.
- The biogas produced as things decay in landfill is being collected and used to fuel small power stations, as is biogas from a Melbourne sewerage plant. (Biogas is mainly methane.)
- A pig farm in Victoria is treating the livestock excrement to produce biogas that's burnt to provide energy for the farm and organic fertiliser, as well as improving the smell of the neighbourhood.
- In canneries, waste fruit and vegetable peelings are being used to produce biogas, which is burnt to provide heat energy to power the canneries.

Converting organic waste to biofuel and burning it gives off less greenhouse gas than allowing it decay naturally. However, as our supplies of it are limited, it has the potential to meet only a small part of our energy needs.

WIND

Using wind to power turbines to generate electricity is one of the most promising renewable energy technologies. It's being done on a fairly large scale in California, Denmark and Holland. In certain conditions it already costs around the same as generating electricity by burning fossil fuels, and it's likely technological improvements in the future will continue to bring the cost down. Its environmental impacts are minimal: the land required to site the wind farms, and some local noise.

The cost-effectiveness of wind farms — a group of wind generators supplying electricity to the grid — depends on the wind conditions where they're sited. In Australia, there's considerable potential for wind-generated electricity in coastal regions, especially SA, Tasmania, Victoria and WA, which lie in or near the path of the 'roaring forties'. Our first wind farm has been built at Esperance in WA and another is under construction at Toora in Victoria.

On a smaller scale, wind is also being used to generate electricity for households in remote and rural areas not on an electricity grid. Windmills have been used to pump water in Australia for about 80 years.

SOLAR THERMAL

Australia has a vast, high-quality solar energy resource with the potential to supply our entire energy requirements. A wide range of solar electric technologies is being developed around the world.

Solar thermal technologies involve using heat from the sun to heat water. The flat-plate solar collectors used for domestic solar hot water systems are examples of this technology. Collectors designed to concentrate the heat allow it to be used for other purposes including cooking and space heating — see *Putting it into practice* on page 10 for an example.

On a large scale, solar thermal technologies can be used to since they first appeared on the market and continues to improve.

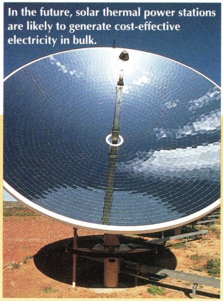
They still require back-up energy — either gas or electricity — to boost the heat on cloudy days and during winter. Depending on where you live and the size of your household, the sun supplies around 70% of the energy required in a year to run these heaters (more if they're located in north Queensland, less in Victoria, for example). According to Sydney University's Dr David Mills, the development work being done on solar collectors is likely to increase this to 90% in the future.

Quantum Link Energy Systems manufactures a hot water system which uses atmospheric heat in a different way. It operates on the same principle as a fridge or reverse-cycle air conditioner in that it uses heat exchange — whereby a cold substance, in this case a very low-temperature refrigerant, extracts heat from the surrounding atmosphere, which is then transferred through the system to heat the water in a storage tank. Water can be heated to 60°C in all weather conditions without needing a booster element. The system still uses mains electricity to power its compressor but, depending on where you live, it can save as much or more non-renewable energy over a year as a normal solar water heating system.

Solar swimming pool and domestic space heaters are also available. Solahart markets a space heater which works by using solar collectors to heat air, then pumping it through the home. On summer nights, the cycle can be reversed to draw cool air in. You can also get custom-made solar space heating systems, but these are usually very expensive.

The cheapest and most available way to use renewable energy in the home is through passive solar design. This means designing and building your home to minimise your need for additional heating and cooling — for example, by insulating it well and orienting it so the winter sun shines in. An article on modifying your home to take advantage of solar energy will appear in CHOICE in an upcoming issue.

There are additional options for those living in the 20 000 or so homes in Australia not connected to an electricity grid. In many cases, renewable technologies in tandem with energy efficiency strategies work out to be more economical than diesel or petrol generators or being connected to the grid. According to Dave Lambert of the Rainbow Power Company — which manufactures and exports renewable technology as well as provid-



In the future, solar thermal power stations are likely to generate cost-effective electricity in bulk.

Photo: NSW Office of Energy

generate electricity by heating water into steam to drive turbines. These technologies have the greatest potential for cost-effective, bulk electricity generation using renewable energy, both in the near and long term. Large solar thermal power stations are already operating in California, where they are connected to the electricity grid.

In Australia, a commercial-scale solar thermal power station is to be built in Tennant Creek in the NT, using 'Big Dish' collectors developed at the Australian National University. These collectors are 400 square metres in size and move to directly face the sun all day. They are expected to collect significantly more energy per square metre of collector area than those used in California, and are more cost-effective. The project is being funded by a consortium of electricity authorities and, along with supplying electricity, will be used to further research and development of the technology and test its feasibility for this kind of application.

Work is being done at the University of Sydney to improve a different type of collector. It uses solar selective surface technology, and large numbers of much smaller trough-shaped collectors (around two square metres). Dr David Mills, who is heading this project, believes it will be more cost-effective again, as the characteristics of this technology make these collectors cheaper to produce than the large dish type. He expects small power stations using this technology will be built by 1997, and a large plant by 2000.

Because sunlight is intermittent, present solar thermal systems need to use some fossil-fuel energy as a back-up. Natural gas is the least polluting non-renewable option. (David Mills estimates the greenhouse gas emission levels of a solar thermal power plant with gas back-up would be one-fifth to one-tenth those of a coal-fired plant per unit of energy produced, depending on climatic conditions.) In the future, it may be possible to use biomass fuel, such as ethanol or methanol, for back-up energy.

SOLAR PHOTOVOLTAICS

Solar photovoltaic systems convert sunlight directly into electric current. The technology is well established, with current research focusing on increasing the efficiency of the energy conversion and reducing the cost of production.

Photovoltaics are already being used commercially for small appliances (like calculators, portable camping lights and bicycle lamps), to power navigational aids, and for electric fencing and household power supply systems in remote areas. Telecom Australia is one of the world's largest commercial users of photovoltaics — it's been using this technology to power remote-area phone systems for 15 years. The power plant on Coconut Island in the Torres Strait uses photovoltaic solar panels, in combination with a wind generator, battery bank and diesel back-up. Solar-powered pumping systems supply water to remote communities and farms.

There's also a healthy export industry in photovoltaics. Both Solarex and BP Solar Australia export solar modules for electricity generation to Asian and Pacific countries, including Sri Lanka and Papua New Guinea.

According to Professor Martin Green of the Centre for Photovoltaic Devices and Systems, University of NSW — which leads the world in this area of research — the cost of photovoltaic cells will continue to go down over the next decade.

TIDAL

The continual movement of water with the tides can be harnessed and used to drive turbines for electricity generation. Tidal power plants operate in several countries, including France and Canada. The French plant has been in use for nearly 30 years.

While a reliable and emission-free source of energy, tidal power can affect the local environment. To harness it, barriers are sometimes built across the mouths of estuaries which prevent the movement of aquatic life in and out of them, and may cause silting and other problems.

ing a consulting service to those considering investing in renewable energy appliances or power supply systems — if it will cost a few thousand dollars or more to be connected to a grid it's worth considering a renewable energy system.

There is a choice of wind, solar photovoltaic and hydro power supply systems. Which is best for you will depend on your local geographic and climatic conditions, and how much energy you need. Wind and solar systems usually include a battery bank to store energy for use when the energy source is unavailable. Sometimes a petrol or diesel generator is used as a back-up. An inverter to convert the direct current electricity (DC) produced by solar cells or wind turbines into alternating current (AC) is needed if you want to operate 240 volt electrical appliances.

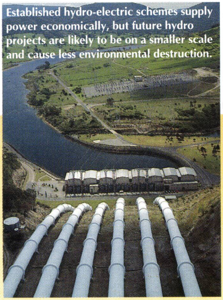
Renewable energy is also being used in other ways in rural Australia. Around 8000 households have solar-powered telephone receivers on their properties, and thousands use solar-powered water pumping systems.

What's standing in the way

While we're close to getting the technology right, there are other problems to be overcome before renewable resources will be a primary source of power in Australia. According to Dr Mark Diesendorf of the newly formed Sustainable Energy Industries Council of Australia (SEICA), from the consumer's point of view finance is a major barrier.

Appliances that use renewable energy, like solar hot water heaters, cost very little to run once installed. But they still cost significantly more to buy, which puts many people off. Says Mark Diesendorf, "When a new power station has to be built, consumers don't get a bill for their share. An electricity utility borrows the money under a government guarantee at a low interest rate and has payback periods of 20 to 30 years. This way, the burden is spread across the community over a long time, so people don't recognise the full financial cost. But they do see the cost when they invest in a solar hot water system or energy efficiency measures. They have to pay the money up front or borrow at comparatively high interest rates and pay it back within a few years.

"What's needed to overcome this bias are new financing arrangements for renewable energy investments — for example, an arrangement where consumers could pay off a solar hot water heater in instalments with their small bill for gas or electricity boosting."



Established hydro-electric schemes supply power economically, but future hydro projects are likely to be on a smaller scale and cause less environmental destruction.

Photo: Snowy Mountains Hydro-electric Authority

Although Australia has a lot of coastline, the conditions along most of it aren't suitable for tidal power plants (for example, the daily tidal variations aren't large enough). The best place in Australia is believed to be the Kimberley region of north WA, but as this is a long way from major population centres it would be quite costly to transmit the electricity to these markets. The NT power authority is looking at using the tidal currents in Darwin Harbour to run a power plant.

WAVE

Wave power plants are another potential source of electricity. Several different ways of harnessing this energy have been developed. Although they wouldn't produce much pollution in the form of greenhouse gas emissions, at this stage it seems they could have a significant negative impact on the local environment around the plant. A recent Victorian study indicated they would only be cost-effective at certain sites and found the west Victorian coast had good wave energy potential.

HYDRO

Hydro schemes use falling water to drive turbines to generate electricity. Once established, these schemes produce virtually no pollution and, unlike solar generators, they can work 24 hours a day.

Most of the electricity currently generated using renewable energy in Australia is from the large hydro-electric schemes in Tasmania and the NSW/Victorian Snowy Mountains. However, it's not likely production of hydro electricity on this scale will be increased significantly. Areas where the right conditions exist are limited, and setting up such schemes usually involves damming rivers and flooding large areas of land, which causes significant environmental destruction.

On a smaller scale, however, hydro power does have potential. In NSW, some smaller private hydro schemes are being developed using existing Department of Water Resources dams. One is already in operation, the Wyangala power station near Cowra. Some research is also being done into the feasibility of recovering energy from the water in the pipelines that run over the escarpment to supply the Sydney metropolitan area. It's expected schemes like this would be privately owned and operated.

For people not connected to an electricity grid, a modern micro hydro system is likely to be the cheapest power supply option if you have the right conditions: a hilly terrain and a constantly flowing stream. The Nimbin-based Rainbow Power Company markets a hydro-electricity generator which uses a Pelton waterwheel to drive the turbines. Tamar Designs in Tasmania also makes micro hydro generators. Both companies are exporting to several South-east Asian and Pacific countries, including Indonesia, Papua New Guinea and the Philippines, as well as selling in Australia.

GEOTHERMAL

The Earth's internal heat is a source of energy, expected to be renewable for the next 100 million years or so. Some geothermal heat is left over from when the planet was formed, but much is still being produced as certain radioactive elements like uranium and radium break down. Deep below the Earth's surface, this radioactive decay heats layers of rock to hundreds of degrees Celsius. Underground rivers and lakes come into contact with these hot rocks, producing huge amounts of steam and hot water, which can be piped to the surface to be used directly (as hot water) or to generate electricity with steam-driven turbines.

Recent studies have identified quite large geothermal resources in SA, but at this stage the cost of tapping them is unknown. On a small scale, two power plants using hot water from the Great Artesian Basin currently generate electricity for remote communities.

PUTTING IT INTO PRACTICE

PACIFIC POWER

IN the Sydney suburb of Hurstville, an ordinary house has been made extraordinary, 'retrofitted' with the latest in solar thermal collectors and high-efficiency appliances. The project, which combines ingenuity from the University of Sydney's Department of Applied Physics and funding from Pacific Power, has involved the development of a new solar collector designed to supply 90% of the energy needed for hot water, space heating and eventually cooking. A solar cooktop is being designed and a clothes dryer modified to run off solar-heated air.

The aims of the project are to see what can be done to reduce energy consumption in existing homes, and to get an idea of the cost and potential of the technology involved. The use of solar collectors and appliances, in combination with a high-efficiency refrigerator, compact fluorescent light globes, insulation and draught excluders, is expected to reduce home energy consumption by up to 75%.

The solar collection unit and solar cooktop are still in the experimental stage, and are not yet commercially available. At this stage, it's hoped the cost of the solar collection unit will be between $3000 and $6000, depending on the requirements of the home.

During the last federal election campaign, the Government pledged $6 million over three years to set up a scheme to offer low-interest loans to consumers to buy solar hot water systems, but at this stage it hasn't begun to implement it.

While some energy authorities are supporting the development of renewable energy technologies by conducting and funding research, others are putting obstacles in its way. Roger Meads, the national sales and marketing manager of Solahart, a leading manufacturer of solar systems, cites the Peel Cunningham County Council in northern NSW as an example: unlike other county councils it won't allow solar water heater owners access to cheaper off-peak rates for booster power. This makes a solar system less economically attractive in this locality, increasing the length of time it takes to pay for itself through savings made on electricity.

Various local governments also have policies biased against solar power, says Roger Meads. If you want to install a solar water heater in Townsville, for example, you need building and plumbing permits. It usually requires at least three inspection visits and, if the whole job costs more than $3000, the consumer has to take out building insurance. These requirements are more than in other localities, and add considerably to installation costs. New housing estates which ban solar water heaters on aesthetic grounds are appearing in Queensland, NSW, WA and SA.

These and other inhibiting factors will need to be overcome if renewable energy technologies and products are to make great inroads in to the market. There's a place for government regulations to help encourage consumer and industry investment in the technologies.

Overall, however, the future looks very optimistic for renewable energy technologies: they can provide solutions to problems we can't afford to ignore. Their cost and efficiency are steadily improving. A recent study by the Australian Bureau of Agriculture and Resource Economics indicated that, based on conservative estimates, it would be technically possible to provide 60% of Australia's electricity demand from renewable sources by 2020. It seems most likely large solar thermal power stations will be phased in as fossil fuel plants need replacing, and be supplemented by electricity generated from other energy sources such as wind, hydro or biomass where the right conditions exist. Along with increased household applications of renewable energy and energy efficiency measures, this should have a very positive impact in Australia: reduced greenhouse gas emissions, cleaner air, cleaner water, reduced fuel imports and a thriving export industry. ❑

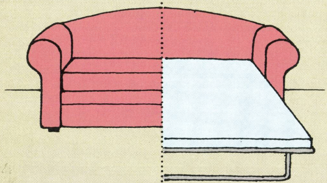
USEFUL CONTACTS

For more information on renewable technologies for household energy, contact:

- The energy information centre of your state's energy department.
- Your local county council or electricity supply company.
- The Rainbow Power Company, 1 Alternative Way, Nimbin 2480; (066) 89 1430 (publishes a book which details a wide range of renewable energy appliances and household power supply systems, *Energy from Nature*).
- Alternative Technology Association, 247 Flinders Lane, Melbourne 3000; (03) 650 3623 (publishes a magazine, *Soft Technology*, which focuses on practical applications).
- Australia and NZ Solar Energy Society, PO Box 124, Caulfield East 3145; (03) 571 7557 (publishes a magazine, *Solar Progress*, which focuses on renewable technologies from a more scientific perspective).

SOFA BEDS: THE CONTENDERS

Many specialty shops have their own sofa bed designs (such as *King Furniture's* clever use of wooden slats in the base, with the 'upholstery' transforming into a quilt!), but here we'll outline the four main types you'll see as you move from shop to shop.



Foam mattress on trampoline deck

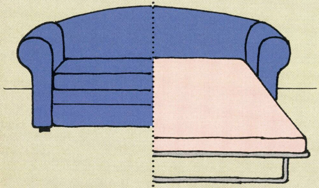
Construction: Sofa bed with foam mattress and foldaway mechanism (bifold or trifold — see *Mechanism choices* overleaf).
Price range: $400 to $1900.

Advantages

- Cheaper than an innerspring mattress.
- For occasional use, it may feel softer than an innerspring.

Disadvantages

- Foam mattress will compress with use and, if a cheap foam has been used, will lose support and resilience.
- As the mattress compresses, the sofa seating position is likely to get lower or change. The small springs which hold the trampoline to the frame may stretch, too, and contribute to this problem.
- At the cheaper end of the price range the fabric is probably of lower quality as well as the foam, and will wear quickly.



Innerspring mattress on trampoline deck

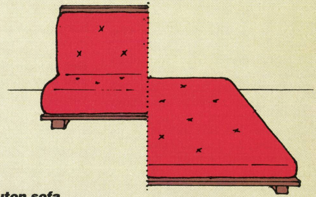
Construction: Small coils make a thin innerspring mattress on top of a typical sofa bed (bifold or trifold) mechanism.
Price range: An additional $100–$200 above the cost of a sofa bed with a foam mattress. Top quality can be found in the range $2000 to $2500 (though price is not a guarantee of the best materials and design). They may sometimes be found more cheaply if the fabric has been discontinued.

Advantages

- More durable than a *cheap* foam mattress.
- Less likely than foam to compress and lose support.
- A different feel from a foam mattress — some say it's a better rest.

Disadvantages

- You must be careful when folding up the sofa bed so that the coils are not crushed awkwardly — the mattress is designed to bend along certain lines.
- Can feel lumpy if you sit on the edge of the mattress.



Futon sofa

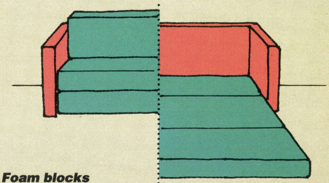
Construction: Folding wooden slat base, rather than a trifold or bifold mechanism. The mattress is made from cotton or cotton/foam layers.
Price range: $400–$800

Advantages

- Firm support.
- A couple shouldn't roll into the centre of the bed.
- For storage or transport, both the mattress and base can usually be folded.
- Relatively cheap.

Disadvantages

- Can be heavy to fold and manoeuvre.
- Sofa back tends to sag due to its weight and construction.



Foam blocks

These are not the kind of sofa bed we've discussed in the main article — essentially, while they're cheap, they're incredibly uncomfortable to sit on, and should only be purchased as a more convenient alternative to storing a slab foam mattress.
Construction: Several foam slabs connected by a fabric cover; no mechanism or springs.
Price range: Less than $400.

Advantages

- Cheap.
- If used very infrequently the foam should be OK for a number of years — but keep it away from the kids or they'll trash it quickly!

Disadvantages

- Hopeless to sit on.
- If they were made from top-quality foam they might indeed make a good bed — however, they're more usually designed for the cheapest price point and this dictates a cheap foam.
- They can lose shape easily.
- Cheap fabrics tear and stain easily.

Mechanism choices

As mentioned earlier, most sofa bed mechanisms used by manufacturers in Australia come from the one manufacturer. With only minor modifications, they're much the same within two broad types:

- **Trifold/couch:** This mechanism folds the mattress base into three sections, all of which fit in the sofa base. The mattress — foam or innerspring — is typically 7 cm or 10 cm thick.

It's the cheaper type of mechanism. The dearer one is the:

- **Bifold:** This has two sections to the mattress base; the mechanism folds over itself once and the top part moves up inside the sofa backrest. It allows the fitting of a thicker mattress — either 10 cm or 17.5 cm.

Both types are relatively easy to fold and unfold once you've been shown how — a child can do it, though maybe not an older person with arthritis or a neck/back problem.

Gone are the vile old wire-mesh mattress supports — tearing sheets, sagging with age and forming holes where kids have jumped up and down. Manufacturers now use a fairly standard trampoline base made from woven polypropylene held to the tubular metal frame by coiled springs.

Higher-priced mechanisms add crosswires under the trampoline for stability. Budget models economise in part by doing away with these crosswires.

Get the best foam you can afford

There are two features of polyurethane foam which shouldn't be confused when choosing furniture:

- **Hardness:** This is an unreliable test of quality for the consumer. Even a poor-quality foam can be made to be hard initially, but will break down with use and become soft.
- **Density:** A quality foam has more polyurethane (and therefore mass) per cubic metre than a poor-quality product. It's this higher density which gives the foam resilience (it will resume its shape when you get off it) and provides support.

Dunlop Flexible Foams and Joyce Australia make most of the furnishing foams in Australia. A top-quality foam like Dunlop's Enduro uses 30 to 36 kg of foam per cubic metre, which means a typical sofa cushion (65 cm x 65 cm x 15 cm) made from it would weigh around 1.9 to 2.3 kg. Many cheap foam cushions and mattresses use foam that is much less dense — such a sofa cushion would only weigh 1.0 to 1.5 kg. Another quality foam is the Comfort Plus range from Joyce Australia. Both Comfort Plus and Enduro are often noted on swing tags attached to sofas and sofa beds.

One thing you can do is to look for these tags, but remember to ask which components use these foams — it may just be the two seat cushions. The only test you can really do in the shop is to feel the weight of the cushions. As noted above, high-density foam makes a much heavier cushion. Get a feel for this as you compare different brands and models and you'll soon be able to spot the cheapies.

Does foam break down over time? Not significantly. It's use which compresses foam, not the passing of time. Accordingly you'll get longer life out of your sofa cushions (and foam mattress) if they're treated well and used infrequently.

It's the cushions which take the most load and which need the best foam. Even sprung cushions are covered with foam, so look for a high-density foam here too. Lighter foams can be used on the arms and back of the sofa, often interleaved with hessian, polyester fibre fill, polyurethane or cotton ticking to give a softer feel and help prevent the fabric wearing from rubbing against the frame.

If you look inside the cushions you'll often see a foam core wrapped in white fluffy stuff. This is usually a polyester weave (such as Dacron). Its job is to give cushions rounded edges and a domed appearance, as well as some initial softness when you first touch them. A lighter grade of foam is sometimes used in this role. It's another sign of a higher-quality cushion to have layers of padding.

Sagging in the seat

Have you sat on a sofa bed which sags, or where the cushions are being swallowed by the base? What's the cause?

There are two things to watch here when buying. Because the mechanism forms the seating base, it will sag if the foam mattress inside has compressed — cheap foam will let you down again!

The other thing to look for is any excessive gap between the front rail and the folded mechanism. Your cushions will eventually slide down into this trap, particularly as they lose resilience and density.

IN-STORE TESTING

IDEALLY plan to visit more than one store, and take someone of different height and weight with you so you can test-drive the models.

- Spend five minutes sitting on the sofa — one person in the centre and one on the end. Is there back support? Do the cushions sink? Is it comfortable? Lift the cushions and see how heavy they feel for an indication of foam quality. Unzip them and look inside.
- Unfold the bed, listening for noises and scrapes against the fabric. Watch for catching at the edges particularly. Compare the weight of mattresses to try and assess foam quality. Does the mattress lie flat? When you sit on the front edge of the mattress, does the centre of the bed rise up and lift the middle legs off the floor? That's a poor sign, as is sitting on the centre and the front legs lifting. Always check the legs stand squarely on the floor.
- Spend five minutes lying, rolling on the bed, and listening for creaks and groans. In particular:
  — Is it lumpy?
  — Can you feel the crossbars in your back or at knee level?

Take this copy of CHOICE with you so you'll look like you mean business (and you won't have to look at other shoppers as they watch you rolling round the beds).

- Fold up the bed and listen again. Is the action smooth? Can the smaller member of your duo operate the mechanism easily?
- Check construction details, following our diagram opposite.

Five questions to ask the salesperson

Q1 How much extra would this sofa bed cost in a more durable fabric?

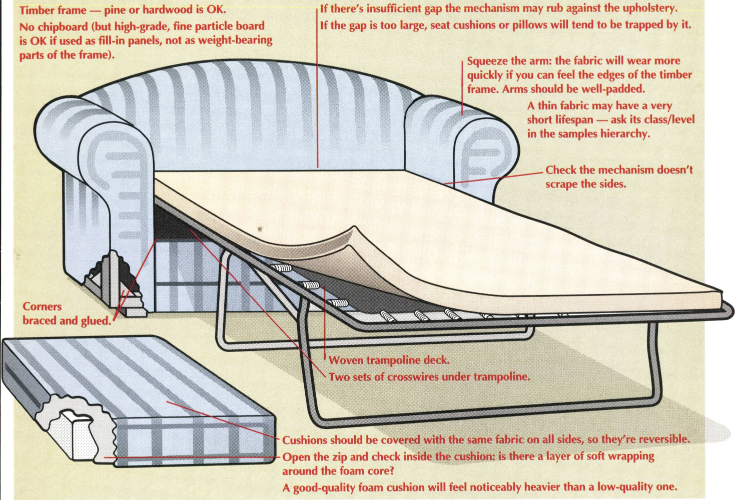
Q2 How much extra if high-density (brand name) foam is used in the cushions? This may be an option.

Q3 How much extra with an innerspring mattress? (This may not always be available.)

Q4 What are the guarantees? There may be separate ones for the metal mechanism, foam cushions and structure. Get a copy of the terms and keep it with your receipt.

Q5 How long will it take to deliver? If the sofa bed must be custom-built for you, try to avoid leaving more than a 20% deposit; if in the interim the manufacturer goes bust you'll lose both the sofa bed and, most likely, your deposit as you're only an unsecured creditor. Don't pay more deposit than you have to.

HOW CAN I TELL QUALITY?



Timber frame — pine or hardwood is OK.

No chipboard (but high-grade, fine particle board is OK if used as fill-in panels, not as weight-bearing parts of the frame).

If there's insufficient gap the mechanism may rub against the upholstery.

If the gap is too large, seat cushions or pillows will tend to be trapped by it.

Squeeze the arm: the fabric will wear more quickly if you can feel the edges of the timber frame. Arms should be well-padded.

A thin fabric may have a very short lifespan — ask its class/level in the samples hierarchy.

Check the mechanism doesn't scrape the sides.

Corners braced and glued.

Woven trampoline deck.

Two sets of crosswires under trampoline.

Cushions should be covered with the same fabric on all sides, so they're reversible.

Open the zip and check inside the cushion: is there a layer of soft wrapping around the foam core?

A good-quality foam cushion will feel noticeably heavier than a low-quality one.

Fabric is important

Furniture shops will present you with various qualities of fabric, usually with a price scale from A to F, 2 to 6, or something similar. The basic line of thin cotton or polycotton/rayon fashion fabrics will only give around two to five years of service, depending on the level of use and abuse.

If you want more life from the product you'll need a better fabric. As a rough guide, a durable fabric will add another $400 to the cost of a three-seater or 2½-seater sofa bed. For soft furnishing fabrics, expect to work your way at least halfway up the price list before you hit substantially more durable materials.

Sometimes leathers are graded differently — the toughest, most durable ones are the cheapest, but not necessarily the best to look at or feel.

Buying a pair of sofas?

If you want to buy a pair of matching sofas, one of which is a sofa bed, ask (or check) these details:

- If the mattress folds inside the back of the sofa (bifold mechanism), the back may appear more upright (from behind or the side) than the plain sofa's back.
- The seating depth (from front edge of cushion to backrest) may be slightly shorter or longer on the sofa bed.
- The back may be thicker on the sofa bed (bifold mechanism).
- The sofa bed will be firmer to sit on (at least initially!) than a properly sprung sofa base.
- The physical dimensions of the mechanism dictate the height of the seating position. It's possible some sofa designs won't accommodate this and they therefore won't be available as sofa beds.

Conclusions

At the end of the day lifespan is the big issue. Ultimately this comes down to the two areas where big cost savings can be made by the manufacturer: quality of the fabric and the foam.

The bed part of sofa beds has come a long way. But if you want a good sofa to sit on for any length of time you'll have to pay $1000 or more. In fact the best idea is to be on the lookout for price reductions from this level where the fabric is a discontinued line.

But even at this price level the limitations inherent in the design mean you may still be disappointed by the seating comfort it offers.

Is it ever worth buying a cheap one? Definitely — if:

- It will be used as a bed only occasionally (a few times a year).
- It will rarely be used as a lounge, and
- Kids won't be let near it.

In this situation it's overkill to buy a top-quality sofa bed. But even if you buy a cheapie it's worth ensuring these basics are met:

- Seating cushions are fully covered in fabric and are reversible (so stains can be hidden, etc).
- The bed mechanism sits squarely on the floor on all legs evenly.
- Chipboard hasn't been used in its construction. ❑

Domestic air travel

With apparently little competition, how much do the two major airlines care about customer service? We spoke to representatives from Ansett and Qantas Australian and answer some of the questions.

DEREGULATION — which began in October 1990 — may have started with the popping of champagne corks and daily news items on the latest discounts (remember three tickets for the price of one?) but much of the fizz has since evaporated. (See *Deregulation — what happened?*, opposite, for the practical aspects of the change.)

Initiator of the fares war, Compass Airlines (Mark I and, later, Mark II) misjudged its costs and failed to attract the business custom which might have sustained it. (Compass I also suffered horrific start-up glitches not entirely under its control, such as the late delivery of aircraft and the failure of its telephone reservations system to cope with demand.)

Three years down the track it seems we are pretty much back to where we were, except that Qantas has merged with Australian Airlines. Did deregulation make anything but a short-term difference?

The answer is: yes and no. To some the only difference between the airlines is still the colours on the tail. Airfares are back to being identical on some journeys whether you fly Ansett or Qantas Australian, and because both have problems from time to time with various aspects of service, the one you prefer is likely to depend on your experiences rather than any structural differences between the two.

Far from having a cosy relationship with each other, however, both airlines claim the competition is intense. According to an Ansett spokesperson, financial analysts figure it takes a population of around 50 million people to support one airline, yet in Australia we have two major airlines and only 17 million people (though longer distances to travel than many countries). This is one reason why it's been so difficult for a third major airline to succeed. According to Ansett, the competition created by this situation is why consumers end up with very similar products. A discount fare introduced by one can be matched by the other within hours because each monitors the other very closely.

Deregulation has undoubtedly affected the way in which both airlines do business. Qantas Australian speaks of "a total change in the way we do business ... it's honed our marketing skills". Ansett says it now concentrates on getting more passengers than it used to, with a lower profit margin on fares — 75% to 80% of its available seats are now discounted, whereas before deregulation only 40% to 45% of seats were allocated to discount fares.

"The corporate culture has changed

dramatically ... We are now living in a market-driven system and that has forced upon us a huge cultural change. And in a big organisation that's interesting to watch ... We have had to spend a lot of money on market research. When I started we had a budget of zero. Now it's — I'm not saying — but we have to understand what our customers want. If we don't do that we go broke." — Ansett Australia.

DEREGULATION – WHAT HAPPENED?

PRIOR TO DEREGULATION in October 1990 just about every aspect of domestic airline business in Australia was regulated. The number of passengers able to be carried on any flight, the air networks and the cost of fares were all controlled under the Airlines Agreement Act 1981. First-class fares were to be 50% above the standard economy fare, business-class fares 15% above.

Now the airlines can charge what they like and fly smaller or larger aircraft according to demand. Also, depending on the state in which they are operating (because some states have kept control over how many airlines can operate over some country routes), the airlines can now decide for themselves whether they will increase the number of destinations in their networks, or drop off unprofitable routes.

Customer service

Before deregulation a series of Airlines Agreement Acts (the 'two-airlines policy') guaranteed that Ansett (then ANA) and Australian (then TAA) were the only two operators on the major trunk routes in Australia. There was financial subsidy for unprofitable routes and capacity was regulated to match demand. Fares were also set, and so income was to a certain extent guaranteed. Deregulation has meant the airlines' income is no longer assured. Customer service departments are listening harder than ever to consumers — particularly frequent flyers. Qantas Australian, for instance, will change a meal after only five complaints:

"Very recently we put on a Thai omelette. The 9 am brunch service is a difficult one because most people are expecting breakfast, and others who may have already had a breakfast are wanting something more savoury. It was an omelette-base parcel — savoury mince with Asian spices. But it proved a little bit too spicy ... we just scrapped it."

Ansett too has been on the wrong end of Australian conservatism: *"We put on what we thought was a simple but sophisticated continental breakfast, which included a smoked German sausage. After bagfuls of angry mail we put the egg and bacon on again, and everything was sweet."*

Generally, though, Australian consumers tend to vote with their feet rather than write a complaint, and the airlines say they have to be alert — otherwise they may find they've simply lost customers.

"We have had to spend a lot of money on market research. When I started we had a budget of zero. Now it's — I'm not saying — but we have to understand what our customers want. If we don't do that we go broke."
Ansett Australia.

Frequent flyers are perceived to be particularly demanding, and research shows they tend to be high achievers, senior ranking and hard to please. For them travel is often a hate purchase when they would prefer to be at home, says Ansett. Both airlines value their input immensely, but it's not possible to please everyone, as this letter from a consumer and the airline's response indicate:

"I notice the standard of airline food has dropped (I like airline food), ie no dessert..."

It's true there was no longer a dessert, says Qantas Australian, but the change was not in order to save money. Rather it was at the request of customers that it replaced some desserts with fresh fruit. Knowing that some people who like desserts would be disappointed, it has tried to compromise on some sectors with a ricotta cheesecake with a fresh fruit topping.

Letters do get listened to. During the pilots' strike in 1989 Australian Airlines received complaints about the cramped conditions in the aircraft it had chartered from Europe. It took "about 50 to 100 complaints" and Australian pulled some seats out — something they didn't undertake lightly because clearly the fewer seats, the less income.

Have we lost or gained?

It would be a mistake to think deregulation has meant cheaper travel for everyone. The *average* fare may well be 21% lower than before deregulation, but this just reflects the availability of discount fares. Business travellers who have to book at the last minute (when all the discounts are sold out) or who need to keep their right to a full refund in case they have to cancel have to pay full fare.

According to the federal Bureau of Transport and Communications Economics, full economy fares, first-class and business-class fares have all risen in real terms over the last two years.

The major airlines' route structures within Australia haven't changed radically, and in some cases the service to the smaller ports has improved. We now have more flights (and more non-stop flights) to the major capitals than before, and planes are more likely to be on time. The new fare structures, though, can be confusing, as one consumer writes:

"I find it ridiculous that it's cheaper for me to fly from Brisbane to Auckland than Brisbane to Adelaide."

The difference between domestic and international fares has little to do with deregulation — it's simply cheaper per seat to operate an international flight than a domestic one. Cost per seat declines with increasing aircraft size, increasing stage length and as the load factor approaches 100% (that is, the fuller the plane is). International aircraft are usually larger and can therefore carry more passengers, and because of the distances between destinations don't need to burn tonnes of (expensive) fuel in repeated take-offs and landings. Also, because their destinations are fewer, international aircraft incur fewer landing fees, whereas a smaller domestic aircraft with half the seating capacity may have to take off and land every hour.

The types of fare available at the time of booking are also something which can influence the difference in cost.

How low can they go?

The art of allocating seats at various prices so as to maximise revenue is called 'yield management'. It involves complex analytical computer-run systems which monitor and collect information on every flight, passenger type, fare and on passenger numbers. For the airlines it's the key to survival. Both the major air-

GETTING THE BEST DEAL

DEREGULATION and the plethora of fares and discounts now available mean travellers are better off asking a travel agent rather than an airline for the best deal. Most agents have computer systems which allow them to access all available destinations and fares regardless of the airline involved. However, just asking for the best deal may not get you all the information you require, so be specific about your needs.

The industry code of practice says the vendor of a computer reservation system (CRS) must supply a system which throws up an unbiased screen. That is, if you ask for travel on a particular date, it should list all the flights in order of departure, not just those of selected airlines. Despite some allegations to the contrary, research by the Bureau of Transport and Communications Economics has shown that CRSs in Australia were unbiased with respect to Compass II, except in terms of displaying last seat availability.

If price is important to you, book early — after exploring all your options with at least two travel agents. Discount fares sell quickly. Three months ahead of time should be plenty, but do remember the cheaper the fare, the more restrictions there are. Make a point of asking the agent what the restrictions are. For example, advance purchase fares are not refundable (there are provisions for you to change the departure date, but only if there are seats available).

Occasionally you may find a discount fare if you hold off until the last minute as an airline decides to try and fill empty seats, but don't count on it.

If you're unhappy with any aspect of the service write to the airline's customer service department. If the complaint is valid the matter will be taken up with the appropriate staff. It's reasonable to expect a problem caused by carelessness or negligence to be put right and for staff to be rapped on the knuckles, but don't expect a free air ticket.

lines initially refused to discuss it even in general terms.

Geoffrey Lipman, Executive Director of the International Foundation of Airline Passengers, explains: "In a price-deregulated market, carriers need to pitch their own market prices while watching what the competition is doing and making sure of adequate responses if they want to retain market share.

"Using information systems airlines can target different prices to certain routes and not to others in order to match competition, or can give price leadership. Fare wars can be contained to targeted markets, and prices increased in others to pay for the battle. Computer yield management programs allow effective control of passenger mix on each flight. For example, maintaining prices on peak prime-time flights and offering special low rates on off-peak flights to generate traffic and increase load factors."

Airlines can also use their computers to analyse the history of each flight and see how many passengers are unlikely to show — which enables them to overbook with a degree of confidence that everyone who turns up on the day will still get on. Of course, if their calculations are wrong someone's going to have to deal with some frustrated and unhappy passengers.

Yield management also enables the airlines to plan and establish 'products': seven-day, 14-day and 21-day advance purchase fares, for example. It also lets them add 'specials' to fill seats they know will be empty on a particular leg. For example, Qantas Australian put on extra flights for the Crows supporters from Adelaide who wanted to go to Melbourne for the football finals. The airline was faced with filling the extra seats on the return legs, and offered extraordinary discounts to fill them — $99 return for a fare which normally costs around $400.

"There were some things Compass 1 did like offering three tickets for the price of one, which was suicidal. We all lost a great deal of money during that time — we survived, but it knocked the hell out of our balance sheets."
Qantas Australian.

Why can't we have 'Compass fares' back?

The common perception is that we need another airline like Compass to generate *real* competition to get substantial discounts, yet Compass was not able to sustain its discounting:

"If you are talking about Compass I, they had prices which had discounts of up to 55%. These discounts are still available at selected times on selected routes. There were some things Compass I did like offering three tickets for the price of one, which was suicidal. We all lost a great deal of money during that time — we survived, but it knocked the hell out of our balance sheets. Full economy fares have gone up but we are like any other business — costs since have gone up." — Qantas Australian.

It's important to remember that while Compass I offered the biggest discounts — and went broke — Compass II was more conservative. Its discounts when it got off the ground again after Compass I's bankruptcy were actually less than the opposition's, and the resurrected airline made it clear it would not be party to another destructive fare war. (According to the Bureau of Transport and Communications Economics, this seemed to be Compass II's way of trying to lever the fares upwards in the hope that Ansett and Australian would follow suit, but they didn't let up their competition.)

Why can't we have 'no frills' flights and get cheaper fares that way?

'No frills' flights have in fact proved unattractive to many consumers. Both Ansett and Qantas Australian say they have tried it with disastrous results. And cutting back on meals doesn't save a great deal of money, anyway: provision of food and drinks is only around 10% of aircraft operating costs.

Qantas Australian: *"We actually went down that road a couple of years ago and reduced catering in the economy cabin — and had a very strong consumer backlash. People said they wanted a reasonable meal. People like their comfort. They might say they don't want it, but ..."*

Ansett Australia: *"The reason we don't is that expectations have changed. When we deregulated we introduced what was for us a 'no frills' service for our discount passengers. We thought if we could reduce the meal cost we could* *cut the fares. We bore in mind that Compass Airlines was getting accolades for its simple meals, and tried the same thing. We lost millions of dollars of business which switched to Australian. The abuse was quite heated. Our experiment showed that going 'no frills' made customers desert you in great droves ..."*

"If it's not 'winter fog' it's something called 'Air traffic Sydney' ..."

— letter from a consumer.

Delays seem an inevitable part of air travel — international convention even dictates that aircraft arrivals and departures from the terminal within 15 minutes of the scheduled time are considered to be 'on time' (because delays that are this short can often be made up or accommodated in travellers' schedules).

Since deregulation we have seen better on-time performance, and it's expected that as structural improvements to the industry occur, such as a third runway at Sydney and better air traffic control nationwide (plans include the installation of an advanced system by 1997), things should continue to improve, even with an increase in demand.

The consumer who complained bitterly to us about the number of times her Sydney/Canberra shuttle flight had been cancelled had stumbled on a problem Ansett was having in trying to maintain three flights to Canberra in the evening when the demand was not there. The timetable has now been changed.

Changes to the timetable that disrupt a traveller's planned itinerary usually happen at short notice. For example, if a plane develops a fault and is out of action for three days there will be a period when the airline has to cover for that operation — especially if it happens at a time when there is a huge traffic volume such as during school holidays.

And of course delays can lead to further delays: *"Occasionally we get problems with crew running out of hours; there's a statutory requirement that the pilot and crew don't work more than so many hours; we then have to provide a fresh crew and that can result in a cancellation."* — Ansett Australia.

"Of the 250 000 things that can go wrong with an aircraft, the captain has discovered one ..."

Whether the plane has developed a fault en route or one of the crew doing a pre-flight check has discovered a problem, the law requires the crew to notify the engineers — and for passengers the wait begins. It's easy to imagine the airline staff are merely trying to keep passengers placid by 'stringing them along' with sporadic bits of information when a lengthy delay is likely, but both airlines say they now have a policy of being honest and keeping people informed. However, both admit there could be "lapses in communication" at times.

"Until the engineers get inside they don't really know the extent of the problem. A problem with one of the leading lights could turn out to be a major electrical problem, so we have to be very guarded about the facts. We don't speculate. We don't say 10 minutes when it could be an hour ..." — Qantas Australian.

How quickly a fault can be rectified will depend on what it is, the availability of labour and the port. Smaller ports such as Canberra don't carry spare parts, which have to be flown in if required. Some things (such as a faulty coffee machine) don't impair the aircraft's safety and aren't sufficiently important to hold up its departure, but some faults must be fixed before the plane is allowed to carry passengers.

> *"When we deregulated we introduced ... a 'no frills' service for discount passengers ... The abuse was quite heated. Our experiment showed that going 'no frills' made customers desert you in droves."*
> ***Ansett Australia.***

The big question is, how long will it take to fix the aircraft? *"The engineers are pretty good and will let you know, but they tend to talk in half-hours ..."* Ground crew.

In the meantime the operations group is scanning the passenger list for those people who are going to be affected most by this delay — those who will miss ongoing connections, for instance. If the situation warranted it they say they would look at the feasibility of getting another aircraft to stop off and pick up passengers, or even buy seats with the opposition for those people with urgent appointments.

If there's going to be more than an hour's delay you can expect a food voucher to the value of the meal you would have been served in the plane, normally redeemable at any of the airport's restaurants.

Monetary compensation for a delay is "a touchy issue" according to the airlines, and is dealt with individually. In other words, don't bother asking unless you've got a pretty good case.

"Dear Sir, Could you please write into your article what happens when a plane is cancelled ..."

— subscriber's letter.

Who are the lucky ones who get to go on the next available flight when there are limited seats?

"For the most part unaccompanied minors must go, and people with disabilities ... and obviously we are not going to walk away from the biggest account holder. You spend a lot of money telling people they are valued — at some stage you have to make that good. They are bread and butter to the company." — Ground staff.

Translated, this means that after people with ongoing connections and other special considerations, first-class passengers and those who are members of a frequent flyer plan are likely to be chosen. If you have an urgent reason to be at your destination on time you should talk to the counter staff, and if you are not satisfied ask to talk to the supervisor. However:

"It's a perception that the noisiest passenger goes [first]. You might think if you can make the person behind the counter burst into tears you might get them to do something, but there's pretty good [staff] support to cope with that sort of thing. I have seen occasions where people have been taken aside and told if they don't shut up they are not going anywhere today ..." — Ground crew.

Finally, don't treat the aircraft like a bus and front up at the last minute expecting to board. Unlike a bus, a plane has to be balanced in terms of weight, and if the flight has to be reopened to let one person on it's a major hassle. The ground staff have to reopen computer systems and produce another load sheet for the captain, and baggage compartments may have to be reopened. Is it fair to keep everyone waiting for you? And as the airlines pointed out, if you don't turn up till 10 minutes before departure your seat has probably been given to someone else anyway. ❑

CAR CONTROL LOCKS PACK IT IN

When even kids know how to beat the popular steering locks their deterrent value becomes questionable. But our tests found a new one that's not a toy.

HAVING TESTED accessory steering locks and related devices before, we knew they were easy to beat. But we realised there was a wider consumer issue at stake when a group of students on a school excursion to CHOICE was able to volunteer specific information on how to defeat them.

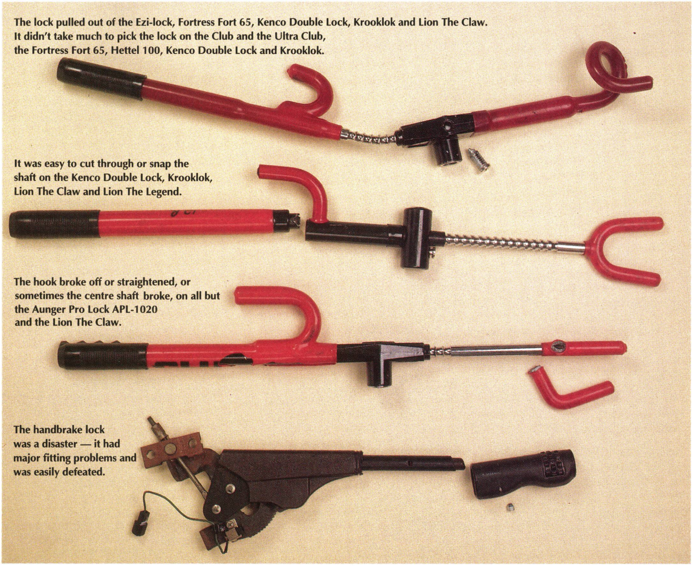
Who are we protecting if we don't expose these devices for what they are? We don't believe we'd be looking after the consumer's best interests not to tell you that even their deterrent value is questionable.

THEY'RE EASY TO BEAT

We tested 15 car control locks for their security value, ease of use and versatility of fit. All are imported and several appeared identical though sold under different brand names.

Our tester — not an experienced thief — was able to defeat all but the **AUNGER Pro Lock APL-1020** in less than a minute each; most were beaten within 20–30 seconds, and some within five seconds. Most could be defeated in more than one way (see Table 1 for details). However, the stand-out non-performers were the **KENCO Double Lock** and **KROOKLOK** — there were no fewer than five basic ways to get them open!

In Table 1 we've summarised a range of tests into four categories: lock picking, breaking, cutting and pulling out the lock. Much of our testing was done in a real-life situation, with the locks fitted to a steering wheel inside a car. This limits the extent and direction of force that can be applied, and we felt it was necessary to do it this way to avoid creating an artificial environment with peculiar and



The lock pulled out of the Ezi-lock, Fortress Fort 65, Kenco Double Lock, Krooklok and Lion The Claw. It didn't take much to pick the lock on the Club and the Ultra Club, the Fortress Fort 65, Hettel 100, Kenco Double Lock and Krooklok.

It was easy to cut through or snap the shaft on the Kenco Double Lock, Krooklok, Lion The Claw and Lion The Legend.

The hook broke off or straightened, or sometimes the centre shaft broke, on all but the Aunger Pro Lock APL-1020 and the Lion The Claw.

The handbrake lock was a disaster — it had major fitting problems and was easily defeated.

convoluted test rigs whose results may not reflect reality.

And we should make clear we were not being hard on these locks. A thief needn't use anything costing more than a few dollars: no power tools, no crafted locksmith's devices, nothing fancy.

DEFEATED WITHOUT TOOLS

Two of the locks deserve special mention: we could beat them bare-handed: the **KROOKLOK** and **LION The Legend**. We won't tell you how to do it yourself, but we will point out to those stuck with a **KROOKLOK** (steering wheel rim to pedal lock) that they'll improve things if they fit it with the steering wheel hook pointing up towards the dashboard and placed between the two spokes of the wheel that are closest together. Unfortunately the instructions don't warn you of the importance of doing this.

IMPROVED – BUT NOT THOROUGHLY

Four manufacturers/importers said they had improved their products as a result of our last CHOICE report.

Some have clearly fitted better lock barrels that are harder to pull out or to pick (such as four-sided star locks); in some cases welds are stronger.

However, their upgrades were not thorough enough and the devices still have vulnerable points. Are we asking the impossible? No — check out the **AUNGER Pro Lock APL-1020** overleaf; it shows what planning and consistency can achieve.

You can be misled by promotional claims too. The **LION The Claw** and **LION The Legend** claim to be constructed of hardened steel. If this is true it must be of very poor quality because we found it cuts easily. Their packaging should, in fairness, be reworded accordingly.

HANDBRAKE LOCK A DISASTER

We tested one handbrake lock, the **HETTEL 100**. At first sight it appears to be a more convenient alternative to the big stick approach. It uses a combination lock instead of a key. The basic idea is that it locks the handbrake 'on' so a thief can't drive the car very far.

To fit the device you first have to remove the padded grip of the car's handbrake; this may involve cutting the plastic covering off — an irreversible step! The lock is secured by tightening a bolt on which the head is designed to shear off when it's tight (so a thief can't simply undo the bolt). This bolt snapped off while tightening after only one revolution — long before it was able to clamp to the handbrake lever.

SOME ARE MORE COMPACT

When the lock is not in use you want to be able to store it conveniently and safely within the car cabin. Most are long and cumbersome.

The longest and most difficult steering lock to store is definitely the **FORTRESS Fort 65**. Four models are relatively compact and will fit in a large glovebox: **AUNGER Pro Lock APL-1020**, **EZI-LOCK**, **LION The Claw** and **TOP LOK**. Don't leave any of them lying around the cabin unrestrained as they could become airborne in an accident.

ANY DETERRENT VALUE?

Many of these devices are big and coloured bright red so they'll be seen and, hopefully, deter a thief. In fact they're often promoted as deterrents rather than security devices.

We don't know if this philosophy works, but if the thief lacks one or more simple tools, is incompetent, lazy or doesn't have the required five to 30 seconds to spare, then it may be enough to send him/her along to the next car.

But in our opinion if you want to deter a crook with all but one of these locks, you'll probably have to hit him with it.

CONCLUSION

There's only one model to buy: the **AUNGER Pro Lock APL-1020**. It costs a little *less* than most, and has no specially vulnerable points. We won't say it's perfect — any simple lock can be beaten — but it will take more time and skill. This **AUNGER** is the only one which will provide a serious hurdle to any thief.

If you want genuine security for your car we suggest you forget about accessory locks like these and invest in a basic electrical alarm and a concealed engine immobiliser switch. Again, it's not foolproof, but the combination makes it a much longer proposition to contend with.

Some newer cars — including Commodores and Falcons — have made great progress with security. Before buying a new car it's worthwhile to check with your motoring organisation for the latest information on this issue.

WHAT TO BUY

AUNGER Pro Lock APL-1020	$45

Table 1. How they let you down

Brand and model (in alphabetical order)	Lock picked	Broke	Shaft cut	Lock pulled out
AUNGER Pro Lock APL-1020				
AUNGER Prolock2 APL-2025		✘		
CLUB The Club	✘	✘		
CLUB The Ultra Club	✘	✘		
EZI-LOCK		✘		✘
FORTRESS Fort 65	✘	✘		✘
HETTEL 100	✘	✘		
KENCO Double Lock	✘	✘	✘	✘
KROOKLOK	✘	✘	✘	✘
LION The Claw		✘	✘	
LION The Legend		✘	✘	
LION Lion Claw				✘
PATRIOT		✘		
SHERLOCK SHER 58		✘		
TOP LOK Top Lok		✘		

✘ Failed test.

PAY YOUR EXCESS?

PROMOTION of many of these devices includes the boast the manufacturer/importer will pay your insurance excess (to $500 or $1000 as the case may be) if your car is stolen with the lock correctly fitted. Note that one or more of the following conditions may apply:

- Your car is stolen within 12 months of the lock purchase date.
- A statutory declaration must be supplied that the lock was fitted correctly.
- You must be able to produce all keys to the lock.
- You must provide your original purchase receipt.
- You must register your purchase within 14 days.

And of course it presumes you've got comprehensive car insurance in the first place.

Car control locks

Brand and model	Type	Manufacturer/ distributor	Origin	Target price* ($)	Warranty	Dimensions – LxW (mm, folded)
AUNGER Pro Lock APL-1020	Steering wheel	Aunger Plastics	Taiwan	45	not stated	375x125x10
NOT RECOMMENDED (in alphabetical order)						
AUNGER Prolock2 APL-2025	Steering wheel	Aunger Plastics	China	38	not stated	530x115x50
CLUB The Club	Steering wheel	Sperling Enterprises	Taiwan	46	90 days	525x115x45
CLUB The Ultra Club	Steering wheel	Sperling Enterprises	Taiwan	62	90 days	525x115x50
EZI-LOCK	Steering wheel	*(A)*	China	38	not stated	415x130x50
FORTRESS Fort 65	Steering wheel	Haigh Australia	China	30	not stated	620x115x80
HETTEL 100	Handbrake	Auto Cosmetics	Hungary	99 *(C)*	'lifetime'	125x40x35
KENCO Double Lock	Steering wheel	Kenco Car Care	Taiwan	50	not stated	570x110x45
KROOKLOK	Steering wheel to brake	*(B)*	UK	35	not stated	565x80x65
LION The Claw	Steering wheel	R&R Importers	China	39	not stated	370x120x50
LION The Legend	Steering wheel	R&R Importers	not stated	50	not stated	570x105x30
LION Lion Claw	Steering wheel	R&R Importers	Taiwan	69	not stated	535x135x60
PATRIOT	Steering wheel	Rennoc	Taiwan	35	not stated	530x115x50
SHERLOCK Sher 58	Steering wheel	Haigh Australia	China	40	not stated	540x115x50
TOP LOK Top Lok	Steering wheel	Zulu Security	Taiwan	45 *(C)*	90 days	425x130x30

* Prices shown are a good target to aim for when shopping around, based on nationwide checks in October 1993.
** Dimensions are for interior rim of steering wheel.
*** If car is stolen while lock is positioned in accordance with instructions.
(A) When we bought the Ezi-lock the distributor was Haigh Australia; this company says it no longer distributes it.
(B) When we bought the Krooklok its distributor was Repco; this company no longer distributes it and couldn't tell us who the new distributor is.
(C) This was the price we paid earlier in 1993
(D) Steering wheel to brake pedal.

AUNGER Pro Lock APL-1020

**It has a hardened steel shaft, and the lock couldn't be pulled out or picked.
The curved tube at the end passes right through the shaft and is secured at more than one point for extra strength.**

justment range to suit ering wheel** (mm)	Key type	Claims to pay your insurance excess?***	Weight (kg)	Brand and model
0–350	Cylindrical	Yes (to $1000)	1.4	**AUNGER** Pro Lock APL-1020
				NOT RECOMMENDED (in alphabetical order)
0–440	Star	Yes (to $500)	1.6	**AUNGER** Prolock2 APL-2025
5–415	Double-sided	Yes (to $500)	1.6	**CLUB** The Club
0–415	Star	Yes (to $1000)	1.6	**CLUB** The Ultra Club
5–395	Star	No	1.8	**EZI-LOCK**
0–415	Double-sided	No	1.6	**FORTRESS** Fort 65
t applicable	Combination	No	0.2	**HETTEL** 100
0–355	Double-sided	No	1.6	**KENCO** Double Lock
5–780 *(D)*	Double-sided	No	1.0	**KROOKLOK**
5–390	Star	No	1.8	**LION** The Claw
5–410	Star	Yes (to $500)	1.6	**LION** The Legend
0–360	Double-sided with side indentations	Yes (to $500)	1.9	**LION** Lion Claw
0–445	Star	Yes (to $500)	1.6	**PATRIOT**
0–440	Star	Yes (to $500)	1.6	**SHERLOCK** Sher 58
0–385	Star	Yes (to $500)	1.3	**TOP LOK** Top Lok

Aunger
PRO LOCK

CLAIMED IMPROVEMENTS SINCE OUR TEST

SOME MANUFACTURERS have claimed improvements to their products since this test:

- **TOP LOK** claims its new lock cannot be broken.
- Auto Cosmetics claims an early batch of the **HETTEL 100** had faulty shear bolts and thinks we may have tested one of these.
- The manufacturer claims that locks on **THE CLUB** and **THE ULTRA CLUB** have been improved.
- The **EZI-LOCK, FORTRESS Fort 65** and **SHERLOCK Sher 58**, distributed by Haigh Australia, will be redesigned to address problems raised by our tests.

As we haven't tested these refinements we cannot comment on their success. However, we pass the information on to you as some products in the shops may have changed since our tests or as a result of them.

Don't waste your money on junk

Some types of insurance are worth having but others are junk. How can you tell the difference?

YOU CAN BUY insurance policies to cover an array of different risks. For example, there are policies designed to pay a benefit if you're injured playing a sport, if you're diagnosed as having a terminal disease, or even if you die due to being attacked by a crocodile. But which types of insurance do you really need? Which types are unnecessary or even worthless?

You might consider it essential to have some kinds of insurance at certain times in your life. As a general rule, you only need to insure against the risk of events occurring that would cause a financial catastrophe for you or your family.

Most consumers need to consider only four or five types of policy:

- Home and/or contents, including occupier's liability.
- Car (if you have one).
- Term life (if you have dependants).
- Income protection cover (if you can afford it).
- Private health cover (at some stages of life).

In addition, we'd recommend comprehensive travel insurance if you take any extended overseas trips — you may not face financial catastrophe in this case but it can certainly get you out of a lot of trouble. See *Insurance priorities* below for more information about how to decide which types of insurance are necessary at different stages of life.

If the policy you select within each of the above five categories covers a *comprehensive* list of events, it shouldn't be necessary to purchase other insurance. For many people, most other types of insurance are like junk jewellery — they might look appealing, but they're not worth much at the end of the day.

The junk list

The types of insurance included in our junk list have one or two major faults:

- They cover a particular aspect of your lifestyle — events that certainly wouldn't result in financial catastrophe, and/or
- They only cover one specific event such as dying in a plane crash — they're not comprehensive. The event they cover should be included in one of the five categories mentioned above anyway.

We've divided our junk insurance list into two sections. The first covers general insurance products, the second life and income protection products. You may see merit in some of the insurances included in the list if you have an aversion to a particular risk. However, we think many consumers will be able to survive comfortably without the types of insurance listed on the following pages.

INSURANCE PRIORITIES

HOW DO YOU go about buying insurance to be certain you get the types of cover you need while avoiding those policies with little real benefit?

A simple rule worth remembering is to cover the most likely and most potentially financially devastating risks first:

- Loss of life: term life insurance.
- Loss of income: income protection insurance.
- Loss of assets: car, home and contents insurance.

The types and amount of insurance you need will vary at different stages of your life. If you're single or have no children and your spouse has a good job, you probably don't need life insurance, for instance. By the time you have children, a mortgage and other financial obligations, the need for both term life and income protection insurance will be much greater. In all cases, check out more than one policy and read the fine print to see what's really covered. See *CHOICE recommendations* below for where to find our most recent analysis of various types of insurance policies.

Once you've covered the priorities, you might want to think about buying the more exotic types of insurance — but not instead of the more important types, and don't be talked into thinking they're essential if you really can't afford them.

What does the policy cover?

The two major factors to consider when selecting an insurance policy are what it covers and what it costs — but don't choose insurance policies on the basis of which one is the cheapest. The contents of the contract are much more important. Cover can vary — no two car insurance policies ever mean quite the same thing by "fully comprehensive", for example. Insurers can vary too, in how strict they are in interpreting the terms of the policy and how quickly they settle claims.

The cost alone is a good reason to avoid purchasing too many peripheral policies — the money is better spent on truly comprehensive 'essential' cover. Buy what you need and make sure when selecting the amount of cover that you will be able to keep up with the premiums.

CHOICE recommendations

If you want more information about a particular type of insurance or specific policy recommendations, the following CHOICE articles may provide useful reading.

- **Travel insurance**, November 1991.
- **Car insurance**, February 1992, December 1992.
- **Health insurance**, November 1992.
- **Term life insurance**, September 1993.
- **House and contents insurance**, October 1993.
- **Income protection insurance**, August 1990, scheduled for June 1994.

INSURANCE AGAINST SHARK ATTACK
FROM THE SHARK SPECIALISTS
WE KNOW ALL ABOUT SHARKS!
...CAN I HELP YOU?
miK

GENERAL PRODUCTS

GENERAL insurance policies cover loss of property, financial inconvenience or liabilities. Contracts are usually short-term — for example, renewable each year. The main types of general insurance are: motor vehicle, home owner's, contents (also called householder's), health, travel and consumer credit. Which types of general insurance don't you need?

Bad weather

This type of cover was originally known as pluvious (pertaining to rain) insurance. It was traditionally sold to farmers as protection against the risk of crop failure due to poor weather; now there's cover available for special events like outdoor concerts. Insurers use computer programs to determine what the weather is likely to be on the day insurance is required and set their premiums accordingly.

This type of insurance would seem ideal for organisers of school fetes or community events, but the premiums are usually extremely expensive. Perhaps if you're a millionaire planning a garden wedding or you're organising an outdoor Madonna concert, you might be able to justify affording them. If you're not rich, hiring a marquee may be a far more effective form of protection from the elements.

Consumer credit

There's a good chance you may have purchased this type of insurance without even knowing. CCI or loan protection insurance is often sold to people taking out a personal loan. So beware! That secondhand car dealer may also be an insurance agent. The policy would pay a benefit to the lender if the consumer defaulted on his or her loan repayments because of death, disability or unemployment. The insurance can normally only be purchased as part of a credit package so even if you think you'd like to buy it, it's difficult to shop around for the best deal.

It is illegal for CCI to be forced on you as a condition of a loan. The consumer has the right to decide whether to buy CCI, and if he or she decides to, which policy. CCI has been found to be very poor value for money. On average only 31% of premiums paid are used by the insurer to cover claims — the rest is used to pay the expenses of the insurance company and creamed off as profits.

A better alternative would be to take out income protection insurance that replaces a percentage of your income stream, enabling you to continue to pay your bills during periods when you can't work due to illness or injury. This is much better than a policy that protects only that part of your income which will be used to pay the loan contract. However, income protection cover is expensive, people in some occupations won't be able to buy it, and it won't help if you're unable to meet loan repayments because you're unemployed.

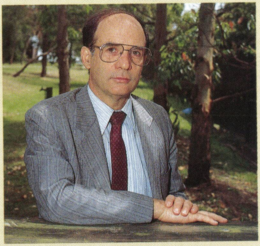
UNWANTED INSURANCE

JOHN CARBLIS took out a home loan with GIO and managed to buy an unwanted life insurance policy at the same time. "I never wanted to take out this policy, it was forced on me as a condition of obtaining the housing loan," says John.

If John had taken out his loan with a 'private' lender (a bank, building society, etc), the inclusion of the insurance policy as a condition of the loan could have been considered to be in breach of the Trade Practices Act, which states that a seller should not force a buyer to take one product as a condition of purchasing another.

At the time John took out his loan, GIO was still operating as part of the NSW Government and as such the Trade Practices Act did not apply to it.

After contacting our Consumer Information Service, John informed GIO that he wanted the company to acknowledge the life insurance policy was no longer a condition of the loan.



Although not legally obliged to do so, GIO agreed to suspend the policy. It has also written to all borrowers who were required to take out the insurance, informing them that the policy will no longer be a condition of the loan.

John also believes GIO should refund all premiums he'd paid for the policy. At the time of writing, he had decided to seek legal advice as to whether he had a right to attempt to recover premiums.

John realises taking legal action could be expensive but says, "I'm not going to give up. If the GIO thinks I'll get off their back, they're mistaken."

GIO marketing manager Peter Smith says the company is not obliged to refund premiums.

GIO is now a corporatised and partly privatised business enterprise. This means it must now comply with all provisions of the Trade Practices Act. New GIO loans don't require borrowers to take out insurance with the company.

DON'T WASTE YOUR MONEY ON JUNK

I'VE SOLD YOU INSURANCE AGAINST ATTACK OF KILLER BEES
AND INSURANCE AGAINST DROPPING YOUR BOOK IN THE BATH
ARE YOU READY FOR THE ULTIMATE?
I'M READY, I CAN'T WAIT!
INSURANCE AGAINST INSURANCE!
GOD, I LOVE THIS TOWN..
mik

Legal expenses

This insurance will pay a benefit to cover your legal expenses if you are sued or if you wish to pursue legal action against another party. The market for this insurance is small so premiums are usually high.

Consumers who might consider this type of insurance worthwhile would be those who earn too much money to qualify for legal aid but who don't earn enough to cope with legal expenses. However, it's important to check what events won't be covered by legal expenses insurance. For example, you may not be able to claim for "any event which, at the time of proposing the insurance, you knew would happen or you knew was likely to happen." You also may not be covered for marital and family disputes or business matters. In general, we think this insurance is too specific and too expensive. It would have more merit if sold as an add-on benefit with house and contents or comprehensive car insurance.

Mugging

Popular in America, this cover pays if you die or are hurt in a mugging. Avoid it because it is not comprehensive, pays out very little and the risk is covered by good life, income protection and health insurance policies. It plays on your fears, not on your needs.

Pet health care

The perfect policy for pet fanatics — especially if they find themselves shelling out hundreds of dollars a year to keep Kitty or Fido in tip-top condition. Pet health insurance could help in an emergency situation when expensive treatment was needed to keep the animal alive. The trouble is, these policies appear every now and again and often quickly disappear. It can be difficult to tell if you'll be able to continue the policy from one year to the next. If you're really keen, find out how long the company's been in business.

Sports protection

These policies are designed to cover members of sporting clubs and associations in the case of injury. Such injuries should be covered by comprehensive income protection or health insurance policies, so specific policies are really an 'optional extra', if they're worthwhile at all.

Some exceptions might be if your income protection or life insurance policy won't pay claims if death or disability is caused by participation in some sporting activities — 'racing other than on foot' is an exclusion found in some life/disability policies. Selecting the right life and income protection policies in the first place will eliminate this problem. It could also be useful if surgery was required to correct a sporting injury and you didn't have private hospital insurance, but really you'd be better off with more comprehensive health insurance (check it covers *your* sport).

Mortgage protection

This type of insurance has merit in that it enables people to get mortgage finance if they need to borrow a high percentage of the value of a home. Lenders may insist you take out this type of insurance if you want to borrow more than 80% of the value of your home. What's sometimes not explained to the consumer is that this type of policy doesn't pay a benefit to the person insured. If you default on home loan repayments, your home will be sold and your mortgage insurer will pay the bank any outstanding amounts owed. The insurer could then sue you to recover the amount of money it had to pay. Don't confuse this with income protection insurance, which will give you cash to pay your expenses (including mortgage repayments) if you get sick.

LIFE PRODUCTS

STRAIGHT life insurance provides a payout in the event of the death of the person insured. The main purpose of this type of insurance is to replace a family's income and provide a lump sum for future financial needs if the breadwinner(s) dies or, with disability insurance, becomes disabled. Life contracts may cover a longer period than general insurance contracts (with the exception of term life, which is usually renewable yearly. See CHOICE, September 1993).

Income protection and term life insurance are a high priority for people with dependants or financial commitments (see *Insurance priorities*). However, most consumers will be able to eliminate some (perhaps all) of the following types from their list of insurance essentials.

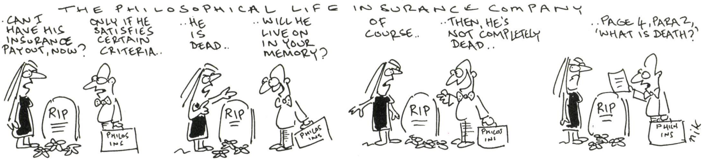
Accident or accidental death

These policies provide cover for death or total and permanent disability, but only if such catastrophes are caused by an accident. Some seem appealing because applicants aren't required to have medical tests or answer health questions before being granted cover (this is not the case with more comprehensive life products). The premiums also seem quite cheap. One policy starts at $7.95 a month for an individual wanting $50 000 cover.

Our main problem with this type of insurance is that it is too specific. Why is it any more valid to insure yourself against the risk of dying as a result of

GOOD FOR SOME: PRIVATE HEALTH INSURANCE

Purchasing private health insurance, even a top cover policy, will not get you better treatment in an accident or emergency or better hospital treatment in general. It will enable you to choose your own specialist or may reduce waiting time for treatment, but it will rarely cover all your costs. Deciding whether or not this type of insurance is worthwhile involves examining your personal circumstances. How likely are you to need treatment at all? For hospital cover, a family would need to spend an average of three days a year in a private hospital to come out ahead with top hospital cover. If you want more information about how to analyse the costs and benefits of private health insurance, read CHOICE, *Medical matters*, November 1992.


THE PHILOSOPHICAL LIFE INSURANCE COMPANY
..CAN I HAVE HIS INSURANCE PAYOUT, NOW?
ONLY IF HE SATISFIES CERTAIN CRITERIA..
..HE IS DEAD..
..WILL HE LIVE ON IN YOUR MEMORY?
OF COURSE..
..THEN, HE'S NOT COMPLETELY DEAD..
..PAGE 4, PARA 2, 'WHAT IS DEATH?'
RIP
PHILOS INC
PHILOS INS
PHIL INS
nik

being run over by a bus than by any other cause? Death or disability as a result of an accident will be covered in comprehensive term life and income protection insurance products. Consumers who would not find it easy to obtain life insurance due to their health may benefit from accidental death/disability cover due to the absence of medical tests, but they shouldn't regard this insurance as a full substitute for life or income protection cover. And if you have a dangerous occupation you may not be able to get either life insurance or accidental death cover.

Crocodile attack

The TIO Northern Territory insurance office is reputed to be the first in the world to introduce a crocodile attack insurance policy. For just $10 you can be insured for $50 000 against fatal attack by crocodile. The policy will only pay out in the event of "death of the insured person solely caused by or directly attributed to crocodile attack and independently from any other cause".

It will not pay out if, among other things, death results from intentional self-injury, suicide, entering into a dare or wager, or if the person is mentally unsound or intoxicated (which you would have to be to go anywhere near a crocodile!).

This policy may be cheap but even the TIO admits it's a bit of a tourist gimmick. Death by crocodile attack would be covered by all good term life insurance contracts. Don't buy it unless you want to frame the policy.

Medical emergency

This may also be called trauma insurance. Policies cover a specific list of conditions, usually including cancer, heart attack, stroke, coronary bypass surgery and kidney failure. More conditions can be included — one policy currently available lists 25. The policies give extremely detailed definitions of these conditions and descriptions of circumstances under which claims will be declined.

It is unwise and expensive to protect yourself against only part of the risk when a catastrophic loss could occur. The life insurance industry argues that because people are living longer and are increasingly likely to survive a major medical trauma, this type of cover is just as important as life insurance. Again we think most consumers would be better off sticking with income protection insurance.

Single flights

If you have dependants, you need to be covered for the economic consequences of your premature death from any cause, be it heart attack, car accident or plane crash. You're not worth more dead from a plane crash, and if a plane crash happens your family may have someone to sue (an option they don't have if you die from most other causes). This type of insurance is not comprehensive and the decision to buy it will largely depend on your personal circumstance. For instance, if you had dependants but had no term life or income protection insurance and the premium was very cheap, you might consider buying it. On the whole we wouldn't recommend it.

Terminal illness

Some term life insurance policies provide for the advance payment of a death benefit if you are diagnosed as being terminally ill with a life expectancy of less than 12 months. These policies are cheaper and easier to obtain than income protection insurance if you're in good health. However, they're not a good option in preference to the more comprehensive income protection cover. The definitions of the types of condition actually covered and the number of conditions covered varies greatly from company to company.

Whole of life

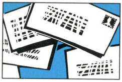
These policies combine a death benefit with a savings or investment component. Once the company deducts commissions and management fees from customers' premiums and pays any claims, left-over money is invested for policyholders, enabling them to make a profit on their premiums once the policy matures. We believe whole of life is an expensive type of life insurance and often not a good investment vehicle. It is inflexible — consumers who surrender a policy before maturity may actually lose money — and there are better ways to save or invest. In our opinion term life insurance is more appropriate for most consumers. ❏

A BORDERLINE CASE: TOTAL AND PERMANENT DISABILITY

Total and permanent disability (TPD) cover pays a lump sum benefit if you become disabled to the extent where you will never again return to work. If you do become totally and permanently disabled your dependants will probably need financial assistance as much as if not more than if you died. However, this type of insurance is only worth buying if the definition is fair and, unfortunately, some insurers use what we consider to be ambiguous if not unfair definitions of total and permanent disability (see also *Letters* on page 30). That's why we've termed it 'borderline'.

There are three definitions that could be used in these policies. The first and fairest definition would pay a claim if the person insured couldn't perform the duties of his or her own occupation. In our recent article on term life and TPD insurance (CHOICE, September 1993) we revealed that while some companies claim to, none of the policies actually uses this definition. The second definition states that a claim will be paid under the policy if the person insured is unable to perform any occupation he or she *is reasonably suited for* by training, education or experience. The majority of policies carry this definition. Some, however, will only pay a claim if the person is unable to perform the duties of *any* occupation the insurance company says he or she *could be* suited to. Policies containing this third definition, whose interpretation could definitely be ambiguous, should be avoided: we can see no good reason why insurers should get away with selling ambiguous policies.

TPD costs about the same as term life insurance and can be purchased in conjunction with a term life policy.



LETTERS

Send your letters to **CHOICE, 57 Carrington Road, Marrickville 2204**. Where possible, please include your daytime telephone number, as we may wish to contact you direct for more information or to discuss your comments and queries.

MTA HAPPY TO HELP

I'm writing in reference to the article *Buying a used car* (CHOICE, October 1993). Your presentation of the relative benefits of buying from a dealer and buying privately was fair and accurate.

I was a bit surprised to note that the Motor Traders' Association (MTA) had been omitted as a source of information in your article's 'state by state' page. We operate a free consumer advisory service and the large volume of enquiries we handle indicates its value to the public.

Additionally, every MTA member, whether on the repair side of the industry or a motor vehicle dealer, must abide by the MTA's Code of Ethics or risk expulsion from the association.

One error did creep into the page showing a motor car and 'what to look for'. Item seven refers to the compliance plate as the source of the date of manufacture and chassis number of the car. The compliance plate carries a date of compliance rather than a date of build completion. Vehicles first sold in Australia usually carry a 'built plate' which provides the date recognised as the manner of determining a vehicle's age. In NSW the Motor Dealers Act legally recognises the 'built plate' as the primary source of vehicle age, allowing reference to the compliance plate only if the vehicle carries no built plate.

Tony Selmes
Executive director, MTA
Darlinghurst, NSW

ENVIRO-CHALLENGED

At a recent meeting of the Bungendore branch of the NSW Farmers' Association, a copy of the May 1993 CHOICE was tabled. Of particular concern to the members was an article titled *The CHOICE Enviro-challenge*. Question eight in this article asked: When you buy a hamburger and soft drink from a fast food outlet, the most environmentally destructive thing on your tray is:

A) The burger wrapping.
B) The plastic cup.
C) The hamburger patty.
D) The plastic straw.

Of these the hamburger patty was claimed to be the most environmentally destructive. Although it was stated that "only around 2% of the local beef industry currently uses feed lots", the article implied that those environmental problems resulting from global beef production practices applied in Australia also. This is not the case.

The majority of beef producers in Australia are aware of the environmental and economic impact which high stocking rates and overgrazing can have and manage their enterprises to avoid adverse and negative results from their farming practices.

There is no argument that past farming practices have caused some environmental destruction. However, most land owners are endeavouring to halt and reverse land degradation. Sustainable agricultural practices are being adopted and Landcare groups are being formed across Australia.

In many cases the grains used in the lot feeding of cattle are of stock feed quality only. This is due to the effects of adverse weather conditions, and these types of grain would not be suitable for human consumption.

It should be noted that during the recent drought in Queensland and northern NSW, thousands of head of cattle would have perished if they had not been taken into feed lots. This also allowed for more rapid destocking of properties and reduced the impact drought has on the environment. The recovery of the land when the rains come will be faster as a result of this ability to destock.

Barbara H Fairfax
Honorary Secretary
Bungendore Branch
NSW Farmers' Association
Tarago, NSW

The CHOICE Enviro-Challenge had both an Australian and a global perspective.

On a global scale, beef production is resource-intensive — it takes much more water and energy to produce a serving of beef than to produce grains or vegetables that provide the same number of kilojoules. Beef production also places a much greater load on the environment.

Within Australia it is the effect on the land that is under most scrutiny. There is no doubt that past farming practices have caused significant damage. Overstocking, the clearing of land to provide pasture and the damage caused by the hoofs of imported animals like cattle, pigs and sheep are just some of the problems. The recognition of these problems and the efforts of organisations like Landcare Australia to modify farming practices are a start, but don't address all the issues.

DEFINING DIFFERENCES

Unfortunately we have real and practical problems with the three categories you use to define total and permanent disability (TPD) in *For the term of your life* (CHOICE, September 1993) and with your reasons for placing the **Australian Casualty and Life** definition in the 'least fair' category.

The 'best' category by your definition, "The insured is never able to perform the duties of his or her own occupation", is unrealistic and not surprisingly none of the policies you examined fulfils this requirement.

The simple reason is that to my knowledge there *are* no policies on the market with that definition and if there were, they would be priced well out of the current market range.

On page 21 of your article, you list a number of insurers, including Australian Casualty and Life, with your least fair definition of total and permanent disability. However, on page 20, you define your 'borderline' category as policies which provide that, "The insured is never able to perform the duties of any occupation that they are reasonably suited for by training, education and experience."

The Australian Casualty and Life definition of TPD is, "When the insured is unlikely to ever be able to follow his/her own occupation or any occupation for which he/she *could be reasonably considered* [our italics] qualified by education, training or experience."

This definition clearly falls in your borderline and not your least fair category.

In addition, we have also received legal advice that our definition and that used in the borderline category would be interpreted by the court in almost identical terms, except the AC&L definition would require the insurer to act "reasonably", which possibly renders it more favourable to the consumer.

In view of the fact that, as I have pointed out, the 'best' category does not exist, presumably this now lifts 'borderline' to the 'best' category.

Andrew Davidson
General Manager, Marketing
Australian Casualty and Life
Sydney, NSW

We believe Australian Casualty and Life (AC&L) should reword the total and permanent disability definition used in its term life insurance policy. We acknowledge that definitions like the one used in the AC&L policy are definitely open to a variety of legal interpretations. The ambiguity of AC&L's definition of total and permanent disability is precisely the problem that impelled us to categorise it as 'least fair'. Perhaps a court of law would use a more lenient interpretation of the contentious clause. To date, however, we have found no court rulings to test the legal meaning of AC&L's definition, and similar definitions appear to have been inconsistently judged, which confirms our fears of ambiguity.

We set out to analyse policies from the point of view of the consumer with no legal knowledge or experience. Ambiguous definitions could quite easily lead such a consumer to read his or her policy, understand it to have an extremely tough meaning, and, as a result, not even bother to lodge a perfectly legitimate claim. If a claim is lodged but rejected because of the TPD definition used, the consumer is usually in no practical position to refute the insurer's interpretation of its own policy. We remain adamant that insurers should rewrite ambiguous clauses and definitions to ensure their policies are not open to misinterpretation by consumers or company representatives.

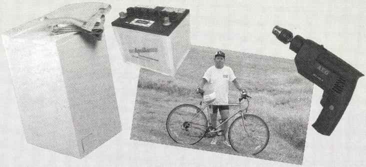
We would also like to reiterate our reasons for including three categories of TPD definition in the article. We stated that the first definition, under which a policy would pay a claim if the person insured was never again able to perform the duties of his or her own occupation, was not used in any of the policies we surveyed. In our opinion, it would be an ***ideal*** *definition and in fact is used in some income protection policies. However, our main reason for wanting to raise consumer awareness of this particular definition was that some life insurance companies actually claim to use it in their policies, when, in fact, they are really using a 'borderline' or 'least fair' definition.*

The 11th CHOICE Subscriber Draw

For new subscriptions and renewals received January 1 to March 31, 1994.

Subscriber draws are now held quarterly and on April 1 we'll be holding our eleventh. The lucky winner will be able to choose any two products from the following tests, published July 1993 to September 1993.

☐ High chairs (July 1993)
☐ Hybrid bikes (Aug 1993)
☐ Water heaters (Aug 1993)
☐ Impact drills (Aug 1993)
☐ Washing machines (Sept 1993)
☐ Car batteries (Sept 1993)



These are products we bought for testing, so you won't be the first to turn them on or set them up. But we'll cover any service problems with a CHOICE warranty that'll match the manufacturers' — just as if you'd bought them new.

All new CHOICE subscriptions and renewals received from members and personal subscribers (including donors of gift subscriptions) by March 31 will go into the draw, unless of course you indicate you don't want to be included.

(If you're not due to renew your subscription during the period, don't worry, we'll be holding other draws during the year — your renewal notice will have the details. And if you're on a two-year subscription you'll be entered on your first anniversary as well as when you renew again.)

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1. The winner will be drawn from new subscriptions and renewals from personal subscribers (including members and donors of gift subscriptions) received January 1 to March 31, 1994. If you opt for a 2-year subscription, you'll be entered on your first anniversary as well as when you actually renew or subscribe.
2. Information on how to enter and prizes forms part of these conditions of entry.
3. Employees, and their immediate families, of the Australian Consumers' Association and its associated companies and agencies are ineligible to enter.
4. Entrants must be residents of Australia.
5. Applications are subject to a verification check and judge's decision is final. No correspondence will be entered into.
6. The prizes will be delivered free anywhere within Australia.
7. Prizes cannot be taken as cash.
8. South Australian residents may enter the draw by completing the form and posting to: Reply Paid No. 13, ACA, 57 Carrington Road, Marrickville 2204, without subscribing to the magazine. Only one entry per person is permissible through this method.
9. Last date for receipt of entries to the draw is March 31, 1994. No responsibility accepted for lost, late or misdirected mail.
10. The draw will be conducted at the office of the Consumers' Association at 10 am on April 1, 1994.
11. The winner will be notified by letter and published in the June 1994 issue of CHOICE magazine.
12. The promoter is Australian Consumers' Association, 57 Carrington Road, Marrickville 2204. NSW Permit No. TC93/5487, Vic Permit No. 93/3661 issued on 25/11/93, ACT Permit No. TP93/2070 issued under the Lotteries Ordinance, NT No. NT93/1654.

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as possible CHOICE has upgraded its te
phone system. So here are two import
numbers that will get you directly to
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an update on past product tests.

Subscription Service: (02) 558 80

For enquiries about subscription or to or
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Consumer Rights Advice

CHOICE operates consumer rights lines
people having problems with a faulty p
duct or a dispute with a service person. T
lines set out what your basic rights are a
what steps you can take to protect the
These lines are also available in four la
guages other than English — Vietname
Arabic, Chinese and Turkish.

CHOICE Consumer Rights Advice:
0055 200
Advice in Vietnamese: **0055 200**
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Youth lines

A line specifically for young consumers, t
'Ripped-off' Line, outlines your shoppi
rights as well as letting you know what y
can do if you run into problems with som
thing you have bought.

Students can also call a resource line
find out where to get up-to-date informati
on the consumer movement and the env
ronment. These two topics are the mo
requested by students and teachers who ri
our Consumer Information Service.

CHOICE 'Ripped-off' Line — Advice for
Young Consumers: **0055 2000**
CHOICE Student Resource Guide:
0055 2001

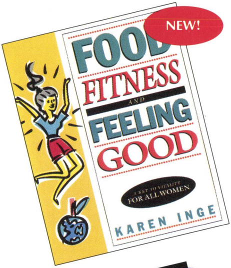
Product advice

A number of product lines also summaris
what to look for when you are buying
particular product. Brand-name recommen
dations aren't included, however — thes
remain exclusive to CHOICE subscribers.

CHOICE Washing Machine Advice:
0055 20013
CHOICE Water Filter Advice: **0055 20014**
CHOICE Baby Products Advice:
0055 20015
CHOICE Safer Domestic
Pest Control Advice: **0055 20016**

Calls attract a rate of 55 cents per minute.

CONSUMER BOOKSHELF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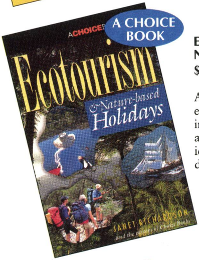
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and the editors of Choice Books

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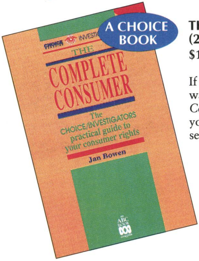
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ABC

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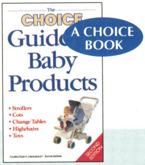
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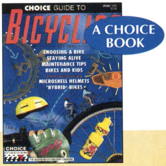
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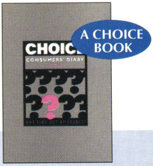
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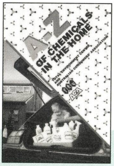

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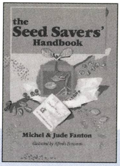

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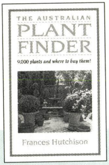
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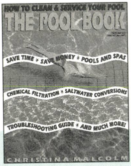
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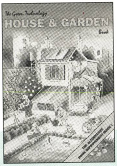
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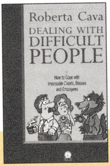
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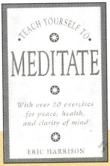
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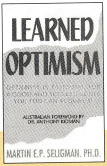
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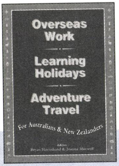
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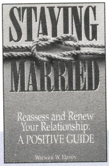
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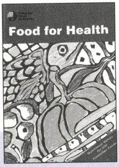
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CONSUMER IN LAW

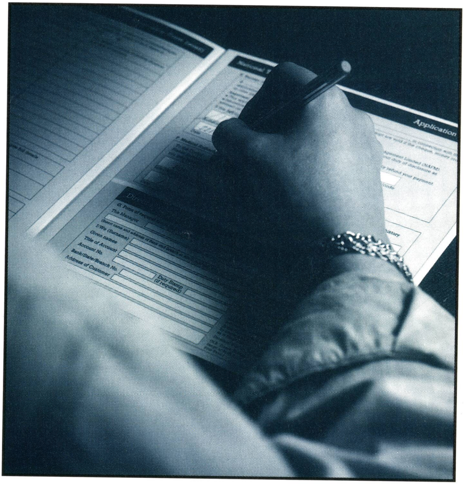
TO DISCLOSE OR NOT TO DISCLOSE?

What insurance companies might want to know about you even if they never asked.

YOU HAVE a new friend. Things are working out fine and you're spending more and more time with her. Your car is meanwhile parked just outside her apartment in the inner city, and not in the garage in your country town. Do you have to tell your car insurer about it?

Ten years ago someone broke into your house and stole your precious record collection. You weren't insured at the time and just had to suffer the loss. Surely the insurance brokers with whom you're about to conclude a contract for home contents insurance don't want to know this? Or do they?

Six months after you bought a new house and had it insured, a fire breaks out in the kitchen and causes a lot of damage. The insurer, however, refuses to settle your claim because you hadn't mentioned on your proposal form that you had a break-in two years earlier and that a different insurance company had settled your claim for stolen household goods. You had never talked to your insurer about any previous claims and losses, but you are informed now that your 'duty of disclosure' is mentioned in detail on the back of your policy. You've only been in Australia for a few years and your English is rather patchy. Can you be blamed for failing to disclose information if you weren't aware of your obligation under the contract?



Non-disclosure: deliberate or innocent?

If there's a problem with non-disclosure, you'll probably hear about it first when your insurer refuses to pay your claim or wants to cancel the contract. In our August and October 1993 issues we discussed where to go for help if you don't agree with your insurance company's decision. Below are a few hints about your duty of disclosure in insurance contracts to help you avoid a dispute in the first place.

Most insurance contracts in Australia come under the **Insurance Contracts Act 1984**. The Act applies to insurance contracts entered into (or renewed, extended, varied or reinstated) after January 1, 1986, except for health, workers' compensation, compulsory third-party motor vehicle (personal injury), marine insurance and re-insurance contracts. It is superimposed on all common law and statutory provisions.

According to the Act, each party to an insurance contract is required "to act towards the other party, in respect of any matter arising under or in relation to it, with the utmost good faith". And the most important obligation from such a contract is the duty of disclosure. You are required to let your insurer know, when you apply for insurance, anything that could possibly be relevant to the contract or to the risk the insurer is accepting, and the insurer has to let you know of this obligation.

The Act distinguishes between deliberate and innocent non-disclosure. Deliberate non-disclosure strikes at the very heart of insurance. After all, the premium you're paying for your cover is based on the calculated risk an insurance company is taking when accepting you. If the insurer had known about the things you didn't disclose, it might not have accepted the insurance altogether, or on different conditions — maybe charging you more. The industry's concern about deliberate non-disclosure is therefore understandable.

If the insurer can prove you deliberately concealed a relevant fact, it may cancel the contract. In that case you'll neither get any money for your claim nor a refund for the premiums you've already paid. You'll also no longer be insured and might have problems finding a new insurer.

But not all failures to disclose relevant information are made deliberately to gain an advantage by concealing something from the insurer. You might have completely forgotton to inform your insurance company about the different wheels you put on your car eight months earlier; you might have been unaware of your duty to disclose such information or you simply had no idea that the information you didn't pass on could have been regarded as relevant.

In the past, and under common law, an insurer could cancel a contract if it could prove that 'a prudent insurer' wouldn't have accepted the insurance, or not at that premium. The 'prudent insurer' test is still relevant where the Insurance Contracts Act doesn't apply (noted above). The Act, however, has changed the situation in favour of the consumer. Now it has to be proved that the insured knew the matter in question was relevant, or that a reasonable person in the circumstances could have been expected to know.

If you can prove a case of innocent non-disclosure, the insurer can still reduce its liability. An example: you have an accident and your car is a write-off. You are accused of not telling your insurer a relevant fact, but can prove it was an innocent omission. If your insurer can prove — with underwriting policies and examples of past practices — that it would have increased your premium by a certain amount if it had known of the undisclosed matter, it would be entitled to deduct that amount from your claim.

When to disclose

Usually, your duty of disclosure continues up to the point of paying for the insurance contract and not beyond, unless specifically stated on your policy. This does not mean, however, that anything that happens to you or your circumstances after you initially sign an insurance contract need no longer be disclosed. Take house, contents or car insurance, for example. It's usually valid for one year and can be renewed after that. Shortly before it expires the insurer sends you a renewal form. You sign it, pay your premium and your insurance cover continues. This renewal of insurance cover is in fact a new contract. That means every time you renew your policy you have to remember any changed circumstances you should disclose.

What to disclose: the obvious and the ambiguous

So what do you have to disclose? What can be claimed by your insurer, or later confirmed by the courts, to have been relevant to the contract of insurance?

Obviously, you must answer all relevant questions your insurer asks you during your negotiations for a contract honestly and to the best of your knowledge. Most insurance companies list specific questions on their insurance proposal form. But even if those questions aren't asked, you are nevertheless required to come forward with any information that could be relevant to your level of risk.

In some cases it's pretty obvious what you have to disclose, for example your driving and accident record when you apply for car insurance. But on other occasions it's less black and white. With motor vehicle insurance, for example, the driving and accident record of any person likely to drive your car may be considered relevant. Minor road traffic breaches — including on-the-spot speeding fines — may also be. If you lodged a claim and your offences were discovered, your history of speeding would probably be considered, as well as whether you were speeding when the accident occurred, or by how much you were exceeding the speed limit.

A criminal record will almost certainly be considered relevant, no matter what kind of insurance you are applying for. According to the Insurance Council of Australia, insurers generally don't ask specific questions about previous convictions. However, if the crime was one of dishonesty and could be considered relevant to the risk, you'd be obliged to disclose the conviction anyway under your duty of disclosure of relevant matters.

Under current privacy legislation and state and federal laws concerning old or 'spent' convictions, *some* people may in certain cases be exempt from the duty to disclose old convictions. But don't just assume that after a trouble-free period of, say, 10 years (or five years for juveniles) you're no longer obliged to disclose previous convictions. The laws applying to the disclosure of spent convictions vary considerably. If you're concerned about privacy, make some inquiries about your specific obligations and rights. Contact the Office of the Privacy Commissioner at the Human Rights and Equal Opportunity Commission, which has pamphlets available which include information on this topic.

Insurers are usually also interested in your previous claims record. In order to assess the risk they are taking by offering you insurance, they want to know about any previous claims you've made on other policies or whether you had any of your previous policies cancelled.

Even if you haven't been insured before and have never lodged a claim, the insurer still wants to know about any losses or events in the past that are relevant to the proposed insurance, such as house fires, burglaries or accidents. All such information may be considered relevant to the risk level. Sometimes a time limit is stated (for example, the last six years).

Some non-disclosures are less obviously relevant to the risk, but have nevertheless been used by insurers to refuse claims. One person, for example, had his claim refused when his house burnt down because he hadn't informed the insurer that the 'state of repair' of his dwelling had deteriorated. On his original proposal form for his house insurance he had answered the question about the dwelling's state of repair with 'good', but that was 12 years earlier and he hadn't mentioned anything on his annual renewal forms. Would you have thought to do so?

Another person had a claim on his house insurance refused because he hadn't disclosed that the co-owner of the dwelling had been convicted four years earlier of carnal knowledge of a minor (whom he had meanwhile married). This claimant took his case to court and won eventually, but it took him three years.

Cases such as the above demonstrate how difficult it may be for a person to know whether the insurer will consider something relevant. Considering the law as it currently applies, we can only advise: if in doubt, disclose it.

What you don't have to disclose

On the other hand, don't panic and start writing long letters to your insurer about all the things that perhaps, one day, eventually, under certain circumstances could have repercussions for your home, contents or car insurance. There are certain things you don't have to disclose, such as matters of common knowledge and matters which the insurer knows, or as an insurer ought to know. If you own a spray painting business, for example, you may not have to mention that you store flammable substances on your business premises. You would, though, if you kept much larger quantities than required for the daily running of your business.

You may also fix locks to your windows or install a car alarm without informing your insurer: matters that diminish the risk need not be disclosed. And if you don't answer a question on the policy proposal and the contract is finalised on that basis, you can't be held responsible for non-disclosure at a later time. In such a case the onus is on the insurance company to follow up the matter with you. If it doesn't, it is assumed that it doesn't want to know.

What the insurer has to tell you

As mentioned before, an insurance contract is a contract of the 'utmost good faith', but you, the insured, can only be expected to act in good faith if you are aware of your obligations. The duty of disclosure therefore extends to your insurer as well, who has to inform you in writing of the general nature and effect of the duty of disclosure, before the contract is concluded. The standard wording is:

- "Before you enter into a contract of general insurance with an insurer, you have a duty, under the Insurance Contracts Act 1984, to disclose to the insurer every matter that you know, or could reasonably be expected to know, is relevant to the insurer's decision whether to accept the risk of the insurance and, if so, on what terms."

The standard form of wording also mentions your duties on renewal of the contract and covers matters that you don't have to disclose. However, insurance companies are not obliged to use this wording, as long as they inform the insured in writing of this duty. Having done that, there is no further obligation on the insurer to inform or remind the insured again when the contract comes up for renewal.

Dealing with problems

Paying close attention to all the questions asked when you apply for insurance and reading the complete insurance and renewal forms should help you avoid problems with non-disclosure later. If it comes to a dispute, however, various options for redress are available. First, you should write to the chief executive of the insurance company and ask that the claim be reviewed.

If this proves unsuccessful — and your insurance company is a member of the Insurance Council of Australia (ICA) — you can refer your claim to ICA's Claims Review Panel. Most larger general insurance companies are members of ICA. You may also consider engaging the help of a public loss assessor, whom you can contract for a fee related to the amount of your claim (for more information, see *Choice Cuts* on page 6). For a more in-depth discussion of whom to contact and how to proceed with a dispute, check our reports in August and October 1993. Of course, you also have the option to take your case to court, but remember, you can't take it to the Claims Review Panel if it's already before a court.

Insurers could help pre-empt problems if they placed more emphasis on *talking* to their clients and discussed policy proposals rather than just relying on written notices, as many inadvertent non-disclosures happen because of a misunderstanding, or because the consumer hasn't understood his or her duty of disclosure.

At the moment, the consumer is required to disclose relevant information, whereas the insurer is under no obligation to ask specific questions. This situation may leave the consumer in a position of doubt as to what could be considered relevant. The Insurance Contracts Act has certainly improved the situation for the the consumer, but it needs an amendment to remove some of the ambiguities. CHOICE believes that if insurers don't ask specific questions, consumers shouldn't be penalised for innocent non-disclosure. Neither should they be expected to remember all the relevant facts that were asked of them when they applied for insurance many years ago. Rather than just printing a reminder about the duty of disclosure on the back of policy renewal forms, insurers should include a complete list of relevant questions. Only when these ambiguities are removed can the consumer, and the insurer, act as intended: with the utmost good faith. ❑

WHAT TO DO TO AVOID PROBLEMS

General

- Answer all questions on your insurance proposal form comprehensively and to the best of your knowledge.
- If you don't understand any of the questions, ask the insurer.
- Remember that your renewal form is a new contract: give it the same attention as an original insurance proposal.
- Bear in mind that previous convictions or criminal proceedings against you may be considered relevant to any contract of insurance.
- Check with your insurance company if you're not sure whether something needs to be disclosed. Note down the name of the person who advises you and file your note with your documents. Better still, report it in writing.
- If in doubt, disclose it, and if you are concerned about privacy, check out the specific requirements with your insurer.

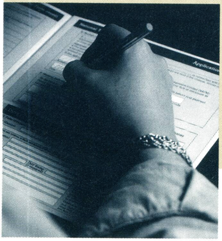
House and contents insurance

- If you're planning an extended holiday or your house or flat is going to be unoccupied for a while (usually more than 60 days) for any other reason, tell your insurance company.
- Tell your insurer if you are renting out your holiday house or flat.
- Your house or contents insurance may not cover you if your premises are used commercially or even as a home office. Tell your insurer if you work from home so the public liability section of your insurance can be adjusted to cover the people who come to your home — if you coach students at your place, for example.

Car insurance

- Let your insurer know about any traffic offences and convictions for road traffic breaches.
- Your car insurance or renewal contract usually asks specific questions about the age of any drivers likely to drive your car more than once a month. Remember to inform your insurer of the driving and accident records of these drivers.
- Tell your insurer about any modifications you make to your car.

Note: "Tell your insurer" always means: write or fax a letter and keep a copy.



BLENDERS

We took nine blenders on a gourmet tour to find out just how versatile these kitchen appliances can be and how easy they are to use.

AS AN INSPECTION of a 1950s original — **SPARTA** (see below) — revealed, the design of blenders has hardly changed in 40 years. They still consist of a circle of blades driven by a motor, but have moved on from opaque jugs to transparent plastic or glass, which makes it easier to keep an eye on the progress of blending. We made soup and a milkshake in the **SPARTA** and found it was on a par with the best of the modern blenders in our test.

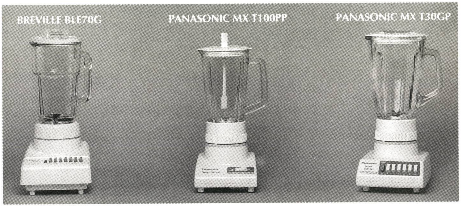
As innovation feeds marketing, over the years some manufacturers have added features and extra speeds to the basic design. However — as our results show — more choice of speeds doesn't necessarily mean better results.

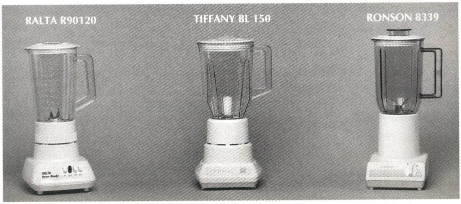
HOW WE TESTED

We put the blenders to the test with a series of both typical and difficult foodstuffs. As well as demonstrating how versatile an individual model is, the tests also serve as a reminder of how much you can do with a blender.

- When whipping cream to top desserts and cakes, we looked for uniformity, smoothness and an increase in volume. The **BREVILLE BLR-2** was the best.
- For home-made milkshakes our criteria were thorough mixing of flavouring, ice cream and milk, smoothness and a good foam. The **BREVILLE BLE70G** was the best.
- We made a simple pumpkin soup, cooking cubes of pumpkin and onion in a chicken stock and adding cardamon, garlic and ginger for extra flavour. In our rating we looked for a smooth soup with no lumpy surprises. All models scored well.
- Breadcrumbs for stuffing, coating veal or adding to sauces need to be uniform and fine, so that's how we rated crumbing bread. The **PHILIPS** was the best.
- Chopped carrots tested the blenders' ability to chop a relatively hard food. Large pieces or puréed parts of carrot brought the scores down. We also processed the carrots further to a purée and scored according to smoothness of texture and absence of lumps. The **PANASONIC MX T30GP** and the **PHILIPS** produced the most evenly and finely chopped carrot and also puréed it well, in the shortest time.
- You can't beat home-made mayonnaise, and blenders should make the task easier. The trick is being able to add the oil slowly enough so it's incorporated into the body of the mixture. For our test, the recipe was one egg, a tablespoon of

PHILIPS HR-2817
BREVILLE BLR-1
BREVILLE BLR-2





Blenders

	Brand/model (in rank order)	Manufacturer/ distributor	Origin	Target price ($)*	Warranty (years)	Wattage	Capacity (L)	Jug mater
	PHILIPS HR-2817	Philips	Mexico	70	1 (replacement)	400	1.25 *(C)*	Plastic
equal	**BREVILLE** BLR-1	Breville	China	55	1 (replacement)	300	1	Plastic
	BREVILLE BLR-2 *(A)*	Breville	China	60	1 (replacement)	300	1	Plastic
equal	**BREVILLE** BLE70G *(B)*	Breville	USA	99	1 (replacement)	440	1	Glass
	PANASONIC MX T100PP	Panasonic	Taiwan	79	1	300	1	Plastic
	PANASONIC MX T30GP	Panasonic	Taiwan	135	1	400	1.4	Glass
	RALTA R90120	Sunbeam	China	50	1	350	1.2 *(D)*	Plastic
	TIFFANY BL 150	GAF	China	40	1	300	1.5	Plastic
	NOT RECOMMENDED							
	RONSON 8339	Thebe	Taiwan	60	1	250	1.2	Plastic

* Prices shown are a good target to aim for when shopping around, based on nationwide checks in October 1993. Anything cheaper is a bargain.

(A) Model changing late November 1993. Will have serrated blades claimed to improve performance with ice.

(B) Breville BLE 70P is a similar model; its only difference is a plastic jug.

(C) 1.5 litres stated on box.

(D) 1 litre stated on box.

The Philips (left) chopped carrots well, but the Ronson (right) had difficulty coping with such hard foods.

lemon juice, a teaspoon of mustard powder and a pinch of salt mixed together in the jug for about five seconds. Then a cup of oil was added by removing the blender's lid insert and pouring it through the hole. Some (the **PHILIPS** and **TIFFANY**) had small holes in the lid insert to allow the oil to trickle in, but we got just as good results with a steady hand through the hole left by the lid insert. The **BREVILLE BLR-1**, **BREVILLE BLR-2** and the **RONSON** produced the best mayonnaise, but the **RONSON** was rather messy.

- A blender should be able to chop nuts for ice cream toppings, cakes and salads. We tested them with peanuts, looking for a fine and uniform result. The **PHILIPS** and **TIFFANY** were the best.
- Similarly for shredded parmesan — a hard cheese most pasta dishes are lost without — and grinding coffee beans: scores went up for uniform, fine particles, and came down for unevenly sized particles and lumps. The **BREVILLE BLR-1** was the best.
- Our green curry paste presented a challenge to cut up tough ingredients such as a whole chilli, galangal (a root spice similar to ginger), whole cloves of garlic, kaffir lime leaves, fresh lemon grass, whole cumin and coriander seeds, peppercorns and a bunch of coriander leaves, stems and roots. This — along with vegetable oil and shrimp paste — produces a beautiful bright green sauce which can be used as a base to cook fish, meat or vegetable curries. We looked for a uniform consistency, with fine particles of herbs and spices. Some blenders only coarsely chopped the mixture, with some pieces not chopped at all. The **PHILIPS** produced the best paste in the shortest time.
- Finally we chopped ice, looking for a finely crushed result which could be added to cocktails or fresh fruit drinks. Scores came down when the result was large lumps of ice surrounded by water. The **PHILIPS** and the **BREVILLE BLE70G** were the best.

IN SUMMARY

Almost any blender is good if you just want to mix soft foods. All did well at whipped cream, soup and milkshakes, for instance. But once you move into the realm of hard and dry foods, the story changes.

At one extreme, the **PHILIPS** stands out as clearly best for food-handling performance. The **BREVILLE BLR-1** and **BLE70G** did well in all but one test (they were rated only 'fair' for chopping carrots).

At the other extreme, the **RONSON** had difficulty with hard foods so was not very good for curry paste, ground coffee, parmesan cheese, ice and puréed and chopped carrot. It was also the most difficult to clean and leaked around the cutting assembly. For these reasons, it's not recommended.

When filled to capacity, the **RALTA** was the only model to leak in use. It was also difficult to assemble correctly and the feet left black marks on the benchtop.

Two new Moulinex blenders were released too late to be included in our test.

WHAT TO BUY

The **PHILIPS** came out best overall: its food-handling performance was by far the best and it was relatively easy to use. The other two in our *What to buy* list are also relatively problem-free.

PHILIPS HR-2817	$70
BREVILLE BLR-1	$55
BREVILLE BLR-2	$60

Prices shown are a good target to aim for when shopping around, based on nationwide checks in October 1993. Anything cheaper is a bargain.

BUYING A BLENDER

WHETHER OR NOT you choose a model in our test, here are a few pointers when buying a blender:

- A pulse button, which gives a short burst of power, is useful for heavy foods and improves uniformity.
- More speeds are not necessarily better. The top-rating blender in our test had just one speed plus a pulse feature.
- Try out the controls: are they easy to use? We preferred large buttons or rocker-type switches to dials, where you have to progress through a range of speeds to go faster or slower. And minuscule buttons with tiny, unclear writing like the **TIFFANY's** were awkward.
- Is the unit stable on the benchtop?
- Cord stowaways make storage easier.
- Does it have a lip? Problems arose with pouring when — with the **PANASONIC MX T3OGP** and **BREVILLE BLE70G** — the lip was simply too small. The **RONSON** and **TIFFANY** also had poor lips.
- All blenders are noisy but you should only be using them for short bursts.
- Both options for jugs — glass or plastic — have their pros and cons. Glass is heavy, so is difficult to handle when filled with liquid, but on the other hand it is usually dishwasher-proof, which plastic isn't.

WATER FILTERS REVISITED

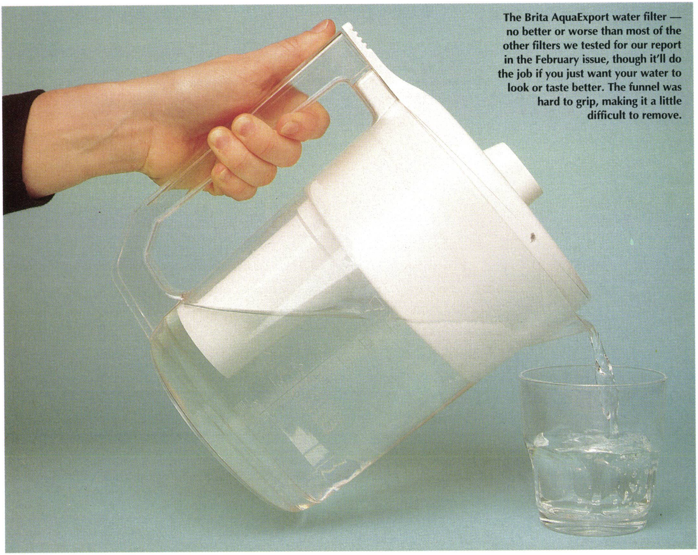
When we tested water filters according to the draft Standard, some manufacturers claimed this wasn't fair — their filters were only designed for use on water that is already safe to drink, after all. We retested one, and got results that prove (again) that jug-type filters do little more than improve taste and appearance.

WE ORIGINALLY decided to test water filters because of the marketing hype that surrounds them — claims like "Some substances [in tap water] are known to be carcinogenic", with the strong implication that water filters can remove these substances. As well, hundreds of subscribers had contacted us with questions about these products.

Our concern was twofold: first, our own and other research has shown that in most parts of Australia tap water is perfectly safe, and scare stories like the one above are just marketing extravagance at its worst. Second — on the slim chance such substances might be present — we wanted to find out if the small jug-type models with mainly carbon filters that many people buy could in fact remove them.

We published the results of our tests in February 1993: in essence, this type of water filter can make your water look and taste better, but little more. If it isn't safe to drink, simple jug-type filters like these can't be relied on to remove all contaminants (see the February report for more information on what could be in your water and what different types of water filter can remove).

We didn't give you the results of our tests on the **BRITA AquaExport** water fil-



The Brita AquaExport water filter — no better or worse than most of the other filters we tested for our report in the February issue, though it'll do the job if you just want your water to look or taste better. The funnel was hard to grip, making it a little difficult to remove.

Water filters

	Brand/model (in rank order — alphabetical where equal)	Manufacturer/ distributor	Origin	Jug price* ($)	1 Replacement filter price* ($)	2 Claimed filter life (L)	Height (mm)	Width (mm)	3 Capacity (L)	4 Flowr (min/L
	AQUASPACE Carafe	The Water Shop	USA	95	75/80	2000-3000	280	130	1.3	3
equal	**BAMIX** Waterboy	Bamix	Germany/Switzerland	30	7/9	60-100	290	155	1.6	1
	BLACKMORES Filter Fresh	Blackmores	Germany	40/65	10/12 *(A)*	40-90	245	145	1.6	3
	BRITA AquaExport	Brita	Australia	40/70	9/11	100-140	230	165	1.7	2
	GLACIER PURE Water Pitcher	Glacier	USA	13/28	7/10	370	245 *(B)*	135	2.2 *(B)*	21
	KAMBROOK K25	Kambrook	China	16/30	8/10	100	250	135	1.5	7
	PUREFLO Filter Jug	Filtermation	Australia	20/36	7/10	100-150	235	155	1.6	3

* Prices shown indicate the range found in nationwide checks in November 1992 and July 1993.

(A) Blackmores now markets filter cartridges that can be refilled instead of replaced; the refills cost $4.50 each. The prices in the table are for the older-type cartridges that we tested, which are still available.

(B) The capacity of the Glacier Pure can be increased to 3.5 litres. The height then becomes 320 mm.

(C) Filter not claimed by the manufacturer to remove this contaminant.

ter in February because of a dispute with the manufacturer over their accuracy. However, a retest with new filter cartridges and analysis by a different laboratory has given us almost exactly the same results as before.

Compared with others of its type, this filter isn't particularly bad or good. It will make your water look and taste better but won't necessarily make it safe to drink if it isn't to start with — as we said, unlikely in most parts of Australia.

With all CHOICE tests, we give manufacturers an opportunity to see the results for their product before we publish. If they claim our results are different from theirs and can substantiate this, we may retest the product to check our original conclusions. This is what Brita claimed with our February results. Unfortunately retesting a water filter takes a fair amount of time so we've had to publish the results of the retest as an update.

MAINTAINING STANDARDS

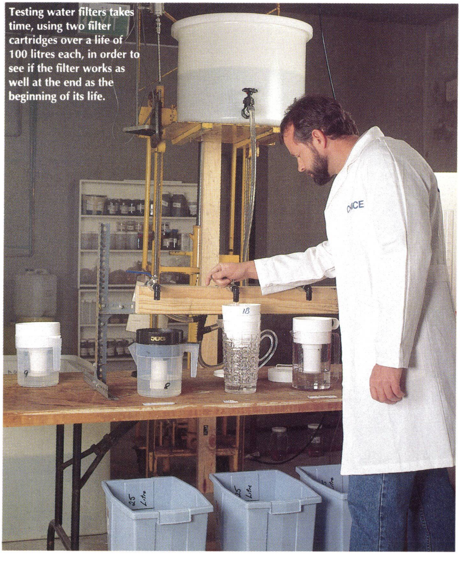
Because there isn't yet an official Australian Standard covering water filters, our testing was based on the draft Standard, which in turn is based on a US Standard.

The draft Standard has two different ways of assessing filter performance, depending on the sort of contaminant being assessed. Fluoride, chlorine and nitrates are put in at the maximum levels recommended in the National Health and Medical Research Council (NHMRC) guidelines for Australian drinking water. In order for the filters to pass the draft Standard's requirements they must remove at least 50% of these contaminants.

Other contaminants (which in our test included a pesticide and four metals — copper, lead, mercury and cadmium) are put in at levels three to 10 times higher than the NHMRC guidelines. For these contaminants, the draft Standard says the filter must reduce the concentration at least to the levels of the guidelines.

A number of filters, including the **BRITA**, performed satisfactorily at removing lindane (the pesticide) and copper. However, although many removed 50% to 80% of the lead, mercury and cadmium, the water still contained too much of them according to the guidelines.

Once they saw our results a number of manufacturers complained the levels of some contaminants in the test were


Testing water filters takes time, using two filter cartridges over a life of 100 litres each, in order to see if the filter works as well at the end as the beginning of its life.

Performance

olour	Suspended solids	Chlorine	Fluoride	Nitrates	Lindane (pesticide)	Copper	Lead	Mercury	Cadmium	**Brand/model** (in rank order — alphabetical where equal)	
✓ *(C)*	✓✓	✓✓	*(C)*	*(C)*	✓✓	✓✓ *(C)*		✓✓ *(C)*	*(C)*	**AQUASPACE** Carafe	
✓	✓✓	✓	*(C)*	*(C)*	✓	✓				**BAMIX** Waterboy	equal
	✓✓	✓		✓✓		✓ *(C)*				**BLACKMORES** Filter Fresh	
	✓✓	✓✓	*(C)*	*(C)*	✓ *(C)*	✓				**BRITA** AquaExport	
✓ *(C)*	✓✓	✓✓	*(C)*	*(C)*	✓✓ *(C)*			*(C)*	*(C)*	**GLACIER PURE** Water Pitcher	
✓		✓✓	*(C)*		*(C)*	✓✓				**KAMBROOK** K25	
	✓	✓			✓					**PUREFLO** Filter Jug	

too high, saying their filters are only designed for tap water that is *already* fit for human consumption and that their claims for contaminant removal only relate to these levels.

This seems to be an admission that the marketing beat-ups have little to do with reality. What's the point of removing 'contaminants' that are already at a safe level? But given the scare tactics used in marketing some water filters ("Your tap water may be poisoning you!" and similar hype), we'd hate to see the Standard watered down to let these filters pass its requirements and use the credibility of the Standards system in their advertising. There's enough confusion and misunderstanding about what a water filter can do without a feeble Standard for marketers to take advantage of. Standards Australia is hoping to have the Standard finalised by the end of the year.

WHAT TO BUY

Our original conclusion stands. If your water is safe to drink but you want to improve its taste or appearance, most of these filters will do the job. The table shows in detail which contaminants each filter removed and whether they passed the draft Standard's requirements — check there if you have special filtering needs. If your water genuinely isn't safe to drink, read the February report to find out which kind of water filter might be able to help you.

	AQUASPACE Carafe	$95
equal	**BAMIX** Water Boy	$30
	BLACKMORES Filter Fresh	$40/$65
	BRITA AquaExport	$40/$70
	GLACIER PURE Water Pitcher	$13/$28
	KAMBROOK K25	$16/$30

* Prices shown indicate the range found in nationwide checks in November 1992 and July 1993.

1 Replacement filter price

Seven dollars might seem fairly reasonable for a replacement filter, but if you're changing the filter once a month (see *Claimed filter life* below), that's $84 a year — around three times the cost of buying the jug in the first place. Ten dollars a filter is $120 a year. This is the sort of expense you have to commit yourself to if you want one of these filters.

2 Claimed filter life

Most manufacturers give two estimates of filter life, one in litres and the other in days. The rule of thumb seems to be you use around 100 L per month. We advise you to change your filter regularly, preferably once a month, to prevent bacteria multiplying in the filter medium. This includes the **AQUASPACE**, which is claimed to last a lot longer than the other filters. It may well continue to filter the water satisfactorily for longer than a month, but according to our tests bacterial growth in the filter cartridge is still a risk.

All the models tested bar the **AQUASPACE** and **BAMIX** give you some sort of indication to remind you when to change the filter, such as a sticker to write the date on. The **AQUASPACE** instructions say to change it when the flow becomes intermittent and doesn't improve with backwashing. The **KAMBROOK** has a knob that needs to be turned every day — not the best option if you're slightly forgetful. The **BLACKMORES** has a test strip that lets you calculate your filter's life based on your water supply.

3/4 Capacity and flowrate

This is the capacity of the bottom part of the jug. In most cases the funnel at the top has less capacity than the jug, so to fill the jug you need to fill the funnel twice. Generally this is only a mild inconvenience (it takes between one and seven minutes for the water in the funnel to filter through). But the **GLACIER PURE** takes 21 minutes for the funnel to empty; to fill the jug's maximum capacity of 3.5 L will take well over an hour. Not one for the impatient.

PERFORMANCE

As discussed in the main article, our tests were based on the draft Australian Standard for water filters. We made up a 'brew' containing fluoride, chlorine, nitrate, cadmium, copper, lead, mercury, colour and a form of lindane (a pesticide). This brew was used to test two cartridges of each filter over the course of 100 litres — roughly the claimed life of this sort of filter.

You're very unlikely to get a 'brew' equivalent to this coming out of your tap, as the levels of some of the contaminants were higher than is recommended in the NHMRC's guidelines for drinking water. However, this is what the draft Standard specifies, and as discussed in the main article, we think the Standard's performance recommendations are reasonable, especially given the extravagant marketing of some filters and resulting consumer expectations.

Samples of water were taken after 2 L, 25 L, 50 L and 100 L had passed through each of two cartridges. This gave us a total of eight test results for each filter. If the filter met the draft Standard's requirements for a particular contaminant on both cartridges fairly consistently over the course of its life, it is given a ✓ in the table. If it did even better and removed 80% or more of the contaminant fairly consistently over its life, we've given it ✓✓ for that contaminant. A blank means the filter didn't meet the requirements for this substance.

Because it was impossible to include suspended solids in the brew, this contaminant had to be tested separately. One sample was taken for each filter after two litres had been passed through. Our rating was determined solely on this sample.

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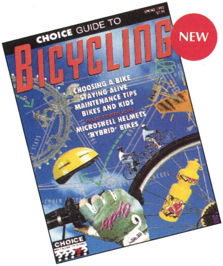
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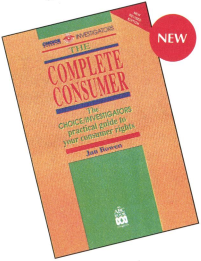
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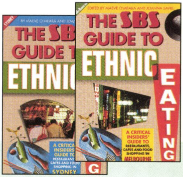
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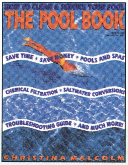
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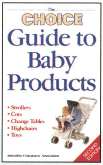
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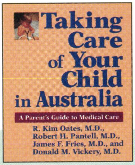
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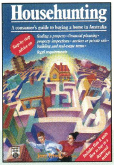
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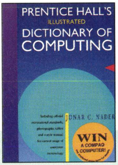
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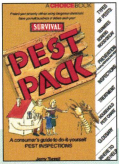
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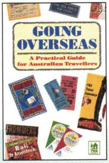
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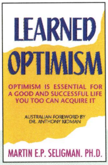
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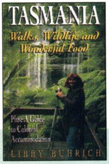
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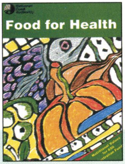
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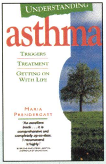
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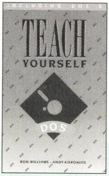

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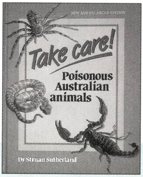

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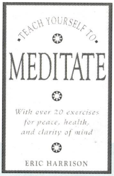
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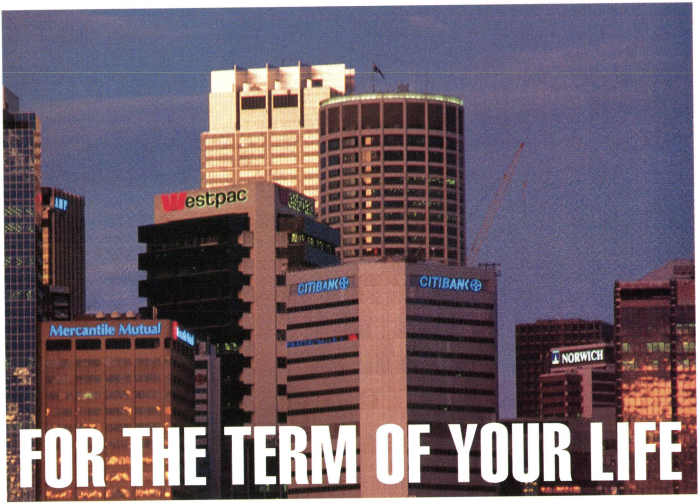


FOR THE TERM OF YOUR LIFE

We've examined 22 term life insurance policies to find those with the best coverage and the fairest conditions.

WHO WE SURVEYED

WE EXAMINED POLICIES from the following companies, which are the biggest nationally available sellers of life insurance according to Insurance and Superannuation Commission data: AMPAC (sold as Westpac), Australian Casualty and Life, Australian Eagle, AMP, ANZ, Colonial Mutual, Commonwealth, FAI (two policies), Friends Provident, GIO, HCF, Legal and General, Mercantile Mutual, MLC, National Australia Financial Management, National Mutual, NRMA, Norwich Union, Prudential, Tyndall, Zurich.

NO ONE WANTS to contemplate becoming permanently disabled, terminally ill or dying while in the prime of their life. Life insurance companies not only ask people to consider these grim possibilities but to pay money *now* so their loved ones will have financial protection *if* ever the worst happens.

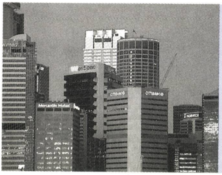
There may be something slightly unpalatable about that concept, but if you've got dependants, a business overdraft, a mortgage or other bills, you might want to safeguard your family or business from the financial devastation that could occur if you were no longer able to work or no longer around. Taking out life insurance is one way to provide that protection, but:

- Do you really need it?
- If you do, what sort of life insurance do you need?
- How much cover is enough?
- Which policies are best?

Who needs life insurance?

Chris's mum thought she was doing a fine thing by purchasing a life insurance policy in his name when he was a baby. She also thought the policy would mature when Chris was 21, a time when he would no doubt find many fine uses for its cash value. Instead of getting a cheque from the company when Chris turned 21, his mother received a letter stating his was a **whole of life** policy (that would be paid out only on his death) and he should continue paying premiums if he did not want to forfeit the cover.

When Chris contacted an insurance agent for advice, it was suggested he keep the policy just in case he actually needed life insurance in years to come but was, for some reason, uninsurable by then. Chris is still deciding what to do with his policy, but his story shows how easy it is to be sold the wrong type of life insurance for all the wrong reasons.



Life insurance should only be purchased if you need risk protection ... Term life insurance is the most appropriate ... because it is simple, flexible and cheap.

It is questionable whether Chris's mother should have been encouraged to buy any kind of insurance policy, given that she really wanted to invest money for Chris. A whole of life policy was certainly not appropriate. If you're in a similar situation, consider the products offered by other organisations like banks to ensure you find the most appropriate way to save.

Life insurance should only be purchased if you need risk protection. The main form of protection traditionally offered by life insurance has been to cover the financial consequences of a family's breadwinner dying or becoming totally and permanently disabled.

In recent years the emphasis has moved away from insuring the life of the principal breadwinner only. Most companies now advise both marriage partners should be insured. This trend recognises the increasing number of two-income families and the contribution made by partners who are not in paid employment. Life insurance has also been extended to business arrangements where the loss of an individual may threaten the survival of the enterprise.

For people without dependants or business obligations income protection insurance is the most important cover, to ensure they can continue to meet their living expenses if they become seriously ill. If they decided to take life insurance too, they would need basic cover only — to meet funeral and burial expenses, legal fees, probate costs and debts.

Many financial obligations become less of a burden as the years go on. Your income will probably increase and as children grow up and the mortgage gets paid off, your commitments will decrease. The need for risk protection in the form of life insurance will also decrease.

What's on offer?

If you decide you need risk protection, there are two types of life insurance sold to consumers for this purpose:

- **Risk cover and savings scheme combined:** We don't consider this the best option for most people. It could be a **whole of life** policy (which pays out a benefit on the death of the person insured) or an **endowment** policy (pays out a benefit when the person insured reaches an agreed age) combined with a **savings plan**. Premiums are much higher than for term life insurance (described below).

With combined risk/investment products, the life company will deduct its expenses (commissions, salaries, rents, provisions for death claims) from the premiums paid; any money left is invested on behalf of policyholders. The part of the premium which is invested is supposed to build up a cash value within the policy so there would be a return to the policyholder when the endowment policy matures or if the policy was cancelled after a number of years.

- Straight risk insurance: **Term life** is the principal type of straight risk cover. It provides for a specified amount of cover one year at a time, so you can decide how much you need and for how long you need to be protected. You can also change companies with relative ease. The term life policy may include a combination of other types of 'add-on' cover including income protection insurance, total and permanent disability (TPD) cover, terminal illness insurance and business expenses insurance. The aim of this type of product is purely to protect the policyholder against the financial consequences of certain events such as death, becoming disabled and serious health problems.

Again, the life company will deduct its expenses from the premiums and any excess goes towards paying claims. There is no investment component so if you don't die or become disabled you get no money back for the premiums you have paid.

Term life the best option

Term life insurance is the most appropriate type of risk protection because it is simple, flexible and cheap. The policies we have recommended are 'guaranteed renewable' — once the company issues the policy, and provided you continue to pay your premiums as required and fill in application documents fully and honestly, the cover theoretically can't be cancelled even if you start to have health problems (though in reality this may not always be the case — see *HIV too hot to handle*, opposite). This approach allows you to review your need for cover each year. If you decide you no longer need life insurance, you simply don't renew.

How much term life?

The amount of cover you need will depend on your circumstances. How much do you owe on your mortgage? How old are your children? Would your surviving partner be able to work? You should at least try to see that your debts are paid off and your family is left with somewhere to live and a lump sum to invest that would bring them income.

For example, if you have a personal loan of $10 000 and $90 000 of your mortgage unpaid, you should start with life cover of $100 000. In addition, if you earn $40 000 a year, your dependants would need around $30 000 each year (75% of the income they were used to receiving) if you were no longer there. A lump sum of $600 000, invested at 5% to provide this yearly income, should be

HOW MUCH COVER DO YOU NEED?

Long-term debts

Mortgage $__________

Other loans $__________

To clear your total debts you should insure for $__________ [A]

Living expenses (monthly)

Regular bills, eg power, rates, telephone, rent, insurances, etc $__________

Food, clothing etc $__________

Other expenses $__________

Monthly total $__________

Multiply by 12 for annual expenses $__________

Multiply by 20 to provide ongoing income $__________

You should insure for $__________ [B]

Complete insurance needs

To insure for an ongoing income and to clear long-term debts add [A] to [B] $__________

Deduct any life cover you may already have $__________

Total life insurance needs $__________

adequate. By adding $600 000 to your major debt cover of $100 000 (total $700 000), your family should be financially secure. This would be the maximum amount of cover needed by a person in these circumstances, and for term life and TPD cover would cost about $5000 for five years if you're a 30-year-old non-smoker. If you think it's too much or you can't afford that amount, less would be better than none. Use the *How much cover do you need?* ready reckoner to calculate the amount of term life you require.

Selecting the best policy

Traditionally, the only major difference between term life insurance policies was price, so selecting the best cover was a simple task.

In recent years the industry has changed the way it markets term life insurance. Most currently available policies are bundled in with a range of other 'add-on' benefits which might include cover for total and permanent disability, income protection, terminal illness, additional accidental death or business protection and sometimes a savings plan option.

The way in which the different types of cover are thrown in together, the absence of Plain English from most policy documents and significant variations in conditions and exclusions between policies now makes selecting the most appropriate term life policy a difficult task. What do you need to know before you can select the right policy?

What's covered?

A straight lump-sum payout on the death of the insured person is the core element of all policies. Many companies (all except two — **HCF** and **NRMA** — in our survey) also sell this straight term life insurance in conjunction with **total and permanent disability cover**. In this article we decided to assess both straight term life insurance and term life plus TPD cover to come up with the policies to recommend in our Buying Guides (see page 23). The ancillary or optional benefits also included in most policies surveyed are discussed in *Add-on benefits* overleaf.

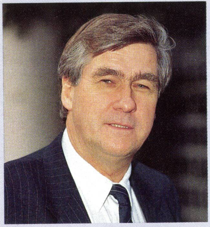
TPD explained

The disability cover usually included in term life contracts is no substitute for income protection insurance. A few policies do provide income protection cover as an add-on benefit, separate from TPD. This type of cover pays a percentage of your salary if you're off work due to injury or illness for a certain time period, and is a form of protection at least as important as life insurance for anyone with financial obligations they couldn't fulfil without their regular income.

The TPD benefit in term life policies is for the payment of a lump sum in the case of a *permanent* disability when there is no chance of you recovering and returning to work. On payment of a TPD claim, the term life cover will usually be reduced by the amount of disability benefit you receive. In most cases the policy will cease altogether if the disability benefit equals the term life cover.

Some companies define total and permanent disability in a way which limits the usefulness of this benefit. The definition is usually divided into two sections. First, total and permanent disability is deemed to occur immediately upon the loss of: two hands or two feet, or the sight of two eyes, or the loss of one hand or foot and the sight of one eye, or the loss of one hand and one foot. Loss can either mean permanent loss by severance or permanent loss of the use of the limb or eye. Policies which provide for loss of *use* are preferable.

In the second part of the definition, the person insured must have been unable, because of a sickness or injury, to perform the duties of his or her occupation for a period of at least six months before a claim will be considered. Then



HAPPY CLAIMS TO YOU...

ROBERT SALLABANK believes ancillary benefits like those included in his Tyndall policy can come in extremely handy. He was able to claim under a scheduled injury benefit when he fell and fractured his wrist, even though he was only off work for a couple of days.

Then when Robert had to have a cancer removed from his bowel last year, he claimed under the policy's crisis benefit clause and received the equivalent of three months' income as a lump sum. During six months of chemotherapy treatment, the policy continued to pay pro-rata benefits for the times he was unable to work.

"Being able to receive that compensation for the time I've lost in post-operative care is certainly a valuable thing," says Robert.

HIV TOO HOT TO HANDLE

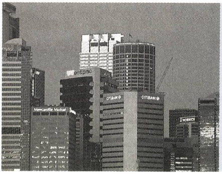
TIM took out a life insurance policy with Zurich in 1989. Shortly after, he was diagnosed as being HIV positive. He didn't immediately submit a claim for the total and permanent disability benefit provided by the policy because he was concerned at the credibility of being diagnosed so soon after commencing the cover.

He was eventually persuaded by his accountant there was no reason why he shouldn't make a claim, and one was lodged with Zurich in 1992.

The insurer eventually denied his claim completely, and cancelled the policy from inception on the grounds that Tim had failed to disclose relevant information. Initially Zurich claimed his non-disclosure related to the way in which he had answered a question on the personal statement he had to complete when applying for cover. This question asks whether the customer belongs to any of the following AIDS high-risk groups: homosexual, bisexual, intravenous drug user, haemophiliac or sexual partner of any of the above.

Tim had answered no to all the questions and has since signed a statutory declaration confirming that his answer had been accurate and honest. Zurich then changed tack, informing Tim the claim was denied because he did not tell them about a doctor's appointment he'd made before applying. He does not believe this reason is adequate. The company sent him a cheque for $4021.74 in refund of all premiums paid. He needs that money, but cannot even cash the cheque as it could be taken as an acceptance of Zurich's offer.

Physically and emotionally exhausted by the progression of his disease, Tim is adamant that the company would have reacted differently if he'd been diagnosed with a less controversial condition.



If you discover a condition or exclusion that's not to your liking within the cooling-off period you can cancel the policy and get a full refund.

the more obvious differences between definitions begin to appear. The most generous definition of TPD would be deemed to have been satisfied if the person is judged as never again being able to perform the duties of:

- *Their own* occupation: for example, a surgeon loses a leg and thus cannot perform surgery. Even though this person may be capable of performing the duties of a general practitioner, payment would still be made because they cannot perform the duties of their own occupation. Unfortunately none of the policies we examined used this definition. Consumers should be on the look-out for companies claiming to use it that really don't. For example, while an ANZ brochure says you will be covered if you're "totally incapacitated and unable to perform your normal work" again, the proposal document says "unable to perform again any work for which he or she is or may become suited".

Most policies in our survey required that the insured is never again able to perform the duties of:

- *Any occupation they are reasonably suited for* by training, education or experience. In the previous example of the surgeon, payment may not be due because the occupation of general practitioner could be considered as one for which the insured was reasonably suited.

The worst policies will only deem the policyholder to be totally and permanently disabled if they are judged as never again being able to perform the duties of:

- *Any occupation they could be suited to.* Under this definition, payment would only be due if the person insured was unable to do any occupation at all, no matter what the duties of that occupation were. If the surgeon was still capable of, say, answering telephone enquiries for a living, he or she would not be considered totally and permanently disabled. The definition ignores whether anyone would actually employ you.

The latter definition is only designed to pay out when you are 'economically dead' and given that the premium for term life plus TPD cover can double the cost of a straight term life contract, the policies that include this definition should be avoided — see *Why they didn't make it*, opposite, for a list.

If an agent attempts to sell you TPD cover as part of a life contract, make sure they thoroughly explain which definition applies. We have excluded all policies with the latter definition from our Buying Guide.

What's not covered?

There are exclusions for **suicide** in all policies. A claim usually won't be paid if a policyholder commits suicide within 12–13 months of taking out the policy. Any increases in cover (except automatic CPI indexation) carry similar time limits. Some policies have a longer exclusion period (see *Why they didn't make it*).

Insurance companies consider people of certain occupations more likely to

ADD-ON BENEFITS

A GROWING NUMBER of term life insurance policies now incorporate more than death and total and permanent disability protection. The following types of cover may also be supplied. We define the add-ons here but have not attempted to analyse them — in fact some may be mere gimmicks to make a policy appear to offer more cover than its competitors. Don't make the availability of add-ons your main reason for buying a policy.

- **Terminal illness** benefit provides for advance payment of a percentage of the death benefit when the person insured is diagnosed as terminally ill and death is likely to occur within six or 12 months. Beware: some companies provide such payments only as a loan on which interest will have to be paid. Offered by: **AMPAC, AUSTRALIAN CASUALTY AND LIFE, AUSTRALIAN EAGLE, AMP, FAI, LEGAL AND GENERAL, MLC, NATIONAL MUTUAL, TYNDALL, ZURICH.**

- **Physical or medical trauma** provides cover for a major illness or injury which can bring major expenses in its wake. Anything from five to 25 different medical conditions are covered by policies available in Australia. Most companies include cover for cancer, heart attack, stroke, coronary bypass surgery and kidney failure. Other insured illnesses available include: major organ transplant, paraplegia, quadriplegia, diplegia, hemiplegia, severe burns, major head trauma, Alzheimer's disease, dementia, encephalitis, multiple sclerosis, blindness, Parkinson's disease, chronic liver or lung disease, occupation-acquired HIV, coma, deafness, pulmonary hypertension. After a claim has been paid, this particular cover expires. This benefit is usually limited to a maximum of one million dollars. Again be careful the benefit is not in fact a loan with interest deducted from your death benefit. Offered by: **AMPAC, AUSTRALIAN EAGLE, AMP, ANZ, COLONIAL MUTUAL, FAI, NATIONAL AUSTRALIA FINANCIAL MANAGEMENT, NATIONAL MUTUAL, TYNDALL.**

- Once some policies make a payment under a benefit like physical trauma cover, they give you a **buy-back** option, which enables you to purchase death cover only for a set proportion of the benefit already received. Offered by: **COLONIAL MUTUAL, NORWICH, TYNDALL.**

- Some have **double-disability** benefit options. By taking this option you will be paid the full disability cover if you become totally and permanently disabled. Once the company has paid this benefit it will automatically continue the death benefit for a set period. Offered by: **NORWICH, TYNDALL, ZURICH.**

- **Unemployment/retrenchment benefit**: When you are involuntarily unemployed for reasons other than disability, some policies will waive the daily portion of premium due under their term life plan for up to six months. Offered by: **MLC, TYNDALL.**

- A further option allows for additional death cover to become payable when caused by **accidental means**. Offered by: **COLONIAL MUTUAL, FRIENDS PROVIDENT, LEGAL AND GENERAL, MLC, NATIONAL MUTUAL, TYNDALL.**

make a claim under a policy than others. Such **high-risk occupations** will have to pay a higher premium before some companies will be prepared to insure them. Other companies will deem certain occupations 'uninsurable' and refuse to cover them at all. The list of excluded occupations is sometimes long and can include manual and unskilled work, seasonal work, heavy labour and even stressful jobs.

Both straight term and term plus TPD policies may contain a list of other **general exclusions**. Some of these are standard features in almost all term life/TPD contracts. For example, a typical list of TPD exclusions might include disabilities arising from an act of declared or undeclared war, intentionally self-inflicted injury or attempted suicide.

Some policies have more than the usual number of general exclusions. For example, some won't cover you if you have been travelling or residing overseas for more than 12 months at the time of total and permanent disability, or if disability has anything to do with pregnancy or racing.

It pays to read the fine print and most policies provide the legally mandatory 14-day free-look or cooling-off period to give you time to do just that. Some offer a longer free-look period. If you discover a condition or exclusion that's not to your liking within that cooling-off period you can cancel the policy and get a full refund. You don't have to give a reason.

Just one more test

Before you'll be granted term life insurance, you will have to satisfy the insurer you are in reasonably good health. Up to a certain amount of cover, medical screening requirements are minimal for customers of normal health. You may just have to fill in a medical declaration form or seek a report from your usual doctor.

Standard medical tests/requirements for higher amounts of cover may include: an examination by your usual doctor, an examination by a specialist or one of a panel of doctors selected by the insurance company, perhaps an electrocardiogram (ECG), and usually HIV screening for cover over $250 000. More stringent companies may require additional tests and reports including a cardiologist's assessment, an exercise or stress ECG and comprehensive blood tests — see *Why they didn't make it* for company names.

A small group of companies also requires even more tests for certain clients, including blood pressure analysis, urine tests and chest X-rays. **FAI** is particularly heavy-handed, requiring women over 40 to have a mammogram in some circumstances.

What you'll pay

All term life policies offer considerably cheaper premiums for non-smokers and women because of their longer life expectancies, though premiums for men may be cheaper for term life plus TPD. We examined the cost of policies for people in low-risk 'sedentary' occupations and found big differences between the dearest and cheapest policies in the companies we surveyed. For example, a 30-year-old female office worker (smoker) could pay from $1846 for five years' term life plus TPD for $200 000 cover (**ANZ**) up to $3663 (**FAI**). The same person wanting straight term life (still $200 000 cover for five years) could pay as little as $1109 (**GIO**) or as much as $2471 (**FAI**).

Policyholders are charged a policy fee as part of their premium. As a rule, the fees are cheaper if premiums are paid annually (as opposed to six-monthly or monthly). The fees are usually indexed, which means they will increase each year in line with the Consumer Price Index (CPI). Some policies have flat fees or guarantee the fee will not increase for a certain number of years, which can mean a small saving over the term of the insurance.

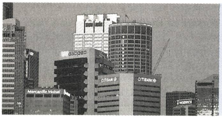
Discounts and 'free' cover

Several different types of discount are offered. Some policies offer new clients a discount if they pay yearly. For example, the **NATIONAL AUSTRALIA FINANCIAL MANAGEMENT** policy offers 10% off the first year's premium. Customers insuring for large sums may be offered discounts on a sliding scale (for example, 2.5% off for $250 000 to $499 999

WHY THEY DIDN'T MAKE IT

SOME POLICIES we examined had one or two strong points but did not make it into our Buying Guides (or only made it as 'borderline') because they were weak in other areas. Other potentially good policies were let down by one or a couple of especially poor conditions and exclusions. The weaknesses we identified were:

- Least fair definitions of total and permanent disability (TPD): **AUSTRALIAN CASUALTY AND LIFE, ANZ, MLC, ZURICH**.
- TPD cover not available for occupations deemed to be 'high-risk', including heavy, unskilled, manual, seasonal or stressful work: **AMPAC, ANZ, COLONIAL MUTUAL, COMMONWEALTH, FAI, FRIENDS PROVIDENT, MLC, NATIONAL AUSTRALIA FINANCIAL MANAGEMENT, NORWICH, TYNDALL, ZURICH**.
- Policies which require medical tests and examinations for a lower cover level than average: **AMP, AMPAC, AUSTRALIAN CASUALTY AND LIFE*, COMMONWEALTH, FAI, MERCANTILE MUTUAL*, NATIONAL MUTUAL*, NRMA, NATIONAL AUSTRALIA FINANCIAL MANAGEMENT*** (*for age 50 next birthday).
- TPD claims won't be accepted if disability is a result of pregnancy, childbirth or related conditions: **TYNDALL, NATIONAL AUSTRALIA FINANCIAL MANAGEMENT** (if it occurs within nine months of taking out the policy).
- Policies which won't pay a TPD claim if the insured person is disabled while travelling or residing outside Australia for more than 12 months: **COLONIAL MUTUAL**.
- Policies which won't continue TPD cover if the policyholder becomes unemployed: **AMP** (after six months), **NATIONAL AUSTRALIA FINANCIAL MANAGEMENT** (from next anniversary).
- Policies which won't pay a claim if it is made as a result of the insured person committing suicide within 18 months or more of taking out a policy: **HCF, TYNDALL**.
- Policies which won't pay a claim unless it is lodged within one month of death or disability: **AMPAC, COLONIAL MUTUAL, NATIONAL AUSTRALIA FINANCIAL MANAGEMENT**.
- Benefit is not indexed: **ANZ**.
- Death due to AIDS is excluded: **HCF**.



Don't buy the first term life policy you're offered by an agent. There are significant differences.

cover, 5% off $500 000 to $999 999, etc). Make sure you ask what the premium will be in future years. Some companies will also offer to throw in a few thousand dollars' free cover for each year you renew the policy.

As a general rule, discounts and bonuses should be of secondary importance when selecting a term life insurance policy. The conditions and exclusions contained in the policy are far more important than saving a few dollars.

Flexibility

Most policies compensate for the fact the value of life insurance cover can be eroded over time by inflation, and give you the option of having the benefit amount automatically increased to keep pace with inflation each year when you renew the policy. This indexation is usually in line with increases in the CPI and means the premiums go up in line with CPI too. You have the right to refuse an increase in any year. However, usually two consecutive refusals will result in the CPI option being cancelled and no further increases will be offered.

In addition to automatic indexation, some policies allow you to increase your life cover by a set percentage without providing any new evidence of good health on the occurrence of certain special events: marriage, the taking of a mortgage, the birth of a child. Other policies allow you to increase your cover but you must meet the same medical and financial requirements as if you were taking out a new policy.

Conclusions

Three simple rules to remember when contemplating buying life insurance:

1. Don't buy it unless you need it. People with dependants, a mortgage and/or other personal debts are the most likely to need some risk protection insurance. Term life insurance is simple and the most cost-effective way of protecting family members or business associates from the financial chaos that could ensue if you died unexpectedly or (if total and permanent disability cover is included) if you become permanently incapacitated.

2. Don't buy the first term life policy you're offered by an agent. There are significant differences between the conditions, exclusions and the price of available policies.

3. Don't be fooled into buying the policy offering the biggest discounts, cheapest premium or longest list of 'extra' benefits. The policies that represent true value don't need bells and whistles to be competitive. ❑

MY POLICY IS A DOG

IF YOU NEED life insurance, the best type to buy is term life. But what if you've already got a whole of life or endowment policy you aren't entirely satisfied with?

Research conducted by the Trade Practices Commission during an inquiry into the insurance and superannuation industry last year found that more than one third of people who discontinue their insurance policies and superannuation before they mature make a loss on their investment. A significant proportion of the policies in question were life insurance. The traditional life office practice of charging high fees during the first few years of a whole of life or endowment policy ensures a poor financial return for most policyholders who surrender policies before several years have passed.

Cashing in early will also mean you forfeit any bonuses that may have accumulated over the years if the policy has a savings plan component. So unless you're prepared to opt out of the policy and wear your losses, you may have to put up with its relatively poor investment value.

If, however, you have purchased the wrong type of policy on the basis of misleading or inappropriate advice, lodge a complaint with the Life Insurance Federation of Australia's Complaints Review Committee (but keep in mind this dispute resolution scheme has some serious shortcomings; we have an article about the scheme planned for next month).

THE BUYI

THE LIFE INSURANCE industry continu
ally claims almost all consumers nee
cover in case they die or become dis
abled or terminally ill. Despite these claim
life offices simply won't sell life insurance t
many consumers. If you have less than pe
fect health or a stressful or dangerous job, fo
example, some companies won't cover you

The policies recommended in the Buy
ing Guides may not be the cheapest on th
market but they are by far the fairest in term
of the way they screen new customers, the
conditions and exclusions.

Recommended policies

Twenty two policies were scrutinised t
come up with the shortlist of recommende
policies for each age group. Each policy ha
to fulfil a stringent list of requirements befor
it could be included. For term life only cove
the following conditions and features wer
considered:

- If you're in what's considered to be a high
risk occupation it's crucial to you that a
otherwise fair policy will be available t
cover you. Our recommended policie
therefore do cover all occupations, thoug
the premiums are likely to be higher fo
people considered high-risk than thos
we've given as examples in the Buyin
Guides.
- Recommended policies have the least in
trusive medical screening and test require
ments of all policies examined.
- Recommended policies give the benefici
ary at least one year to lodge a claim. Policie
which required claims to be lodged withi
one to three months were considered unac
ceptable.
- Recommended policies will pay a claim i
the policyholder commits suicide after 12 o
13 months of new cover. Policies with longe
exclusions for suicide were deemed unac
ceptable.

In addition to the above factors, policie
recommended for term life plus total an
permanent disability (TPD) cover also ha
the following features:

IDES EXPLAINED

TPD cover available for all occupations
lthough higher premiums may apply for
ccupations considered dangerous).
Policies contain the fairest available defi-
ition of total and permanent disability (see
PD explained on pages 19–20 for an over-
iew of the various definitions used).
General exclusions are minimal and there
re no unacceptable exclusions. Exclusions
onsidered unacceptable included non-pay-
ent of claims if the insured person was
ravelling or living overseas for more than 12
onths, if claims involved pregnancy, racing
r even the use of prescription drugs.
Recommended policies will continue to
rovide TPD cover even if you become un-
mployed.

orderline policies

olicies listed as 'borderline' in both term life
nly and term life plus TPD categories com-
ly with most but not all of the above selec-
ion criteria. Check *Why they didn't make it*
n page 21 to ensure they don't have any
roblems or exclusions you're particularly
oncerned about.

National Mutual premiums are an aver-
ge of premiums for 29- and 30-year-olds as
heir premiums are based on 'nearest birth-
ay'. All others are based on 'age next birth-
ay'.

o for value, not price

ecause of the many differences we found
 the conditions and exclusions of the vari-
us policies, we strongly advise against buy-
ng a term life policy just because it's the
heapest you can find. However, to show
ow greatly the cost of this type of insurance
an vary, we have included the total cost of
ive years' worth of cover for $200 000 under
ur recommended policies for various cleri-
al workers (an occupation considered 'low-
isk' by insurance companies). People in
ther occupations may well be charged
igher premiums, but if you start by compar-
ng premiums for our recommended policies
ou can be certain of a fair deal.

Best term life only policies

FIVE-YEAR PREMIUMS FOR OFFICE WORKERS FOR $200 000 COVER

	Male non-smoker	Male smoker	Female non-smoker	Female smoker
30-YEAR-OLDS				
RECOMMENDED POLICIES				
Australian Eagle	2000	2435	2000	2350
Friends Provident Lifestyle	1323	2145	1291	1961
Legal and General	1260	2070	1228	1972
Mercantile Mutual	1021	1517	995	1391
MLC	1358	2400	1178	2037
Norwich	1363	2225	1339	2137
Prudential	1308	2353	1264	2089
Zurich	1185	2137	1064	1890
BORDERLINE POLICIES				
Australian Casualty and Life	1260	2044	1260	1948
GIO	1107	1773	907	1109
National Mutual	1358	2004/2408*	1360	1841/2150*
50-YEAR-OLDS				
RECOMMENDED POLICIES				
Australian Eagle	5760	8895	4015	6140
GIO	3775	8735	2645	4553
Norwich	4611	9155	3377	6840
Zurich	4191	9155	3106	6165
MLC	4803	9211	3596	6574
BORDERLINE POLICIES				
Friends Provident Lifestyle	4913	9349	3287	6285
Legal and General	4480	8280	2966	5472
Prudential	4556	10 120	3070	6927

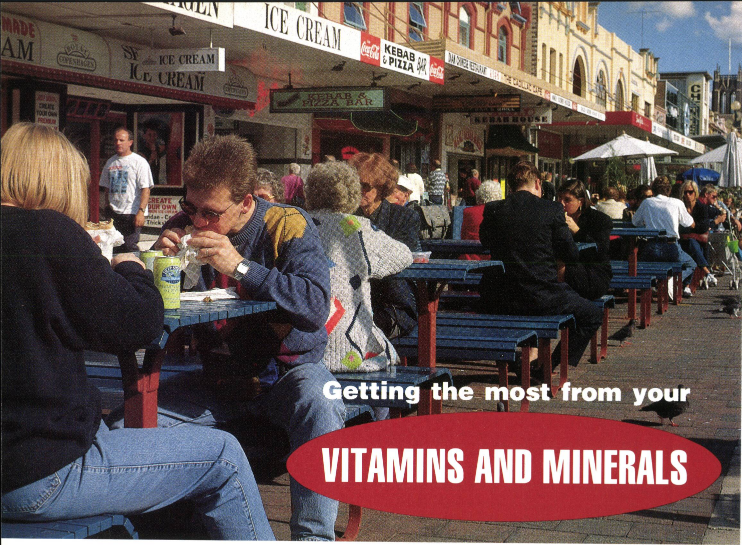
* Premiums for light smokers/heavy smokers

Best term life plus TPD policies

FIVE-YEAR PREMIUMS FOR OFFICE WORKERS FOR $200 000 COVER

	Male non-smoker	Male smoker	Female non-smoker	Female smoker
30-YEAR-OLDS				
RECOMMENDED POLICIES				
Legal and General	1780	2666	2008	2866
Prudential**	1678	2723	1820	2645
BORDERLINE POLICIES				
Australian Eagle	2300	3280	2585	3550
Friends Provident Lifestyle	1766	2752	1846	2795
GIO	1673	2437	1553	1953
Mercantile Mutual	1543	2365	1615	2301
National Mutual	1898	2566/2971*	1962	2451/2760*
Norwich	1836	2966	2001	3171
50-YEAR-OLDS				
RECOMMENDED POLICIES				
Prudential**	8136	13 700	8440	12 296
BORDERLINE POLICIES				
Australian Eagle	7990	15 255	8465	15 495
Friends Provident Lifestyle	8311	14 449	7535	12 657
Legal and General	8500	13 128	8996	12 744
Mercantile Mutual	7545	13 329	6687	11 549
Norwich	8398	15 058	9056	15 696

* Premiums for light smokers/heavy smokers. ** Full-time home-makers not covered.



Getting the most from your VITAMINS AND MINERALS

How easy is it to get enough of them?

Will eating more than current recommended levels protect you against disease?

Are Australians likely to be deficient in any of them?

Read on for some answers.

IF VITAMINS AND MINERALS are good for you, does that mean more is better? Could it be there is a level of intake above the current recommended levels which is optimal for health?

Scientists have peered down microscopes, studied statistics on populations and carried out their own experiments on animals and humans to find out whether there's any advantage in eating more vitamins and minerals than we know is strictly necessary to maintain normal health. In recent years they have focused on vitamins A, C and E and whether these vitamins help protect against cancer and heart disease. Their findings have sent some consumers heading for bottles of vitamin supplements, but the more conservative health organisations aren't yet convinced.

Quite how these vitamins could be acting to protect people from these diseases is not clear. As they are all antioxidants they may help protect the body by neutralising unstable molecules known as 'free radicals' before they can do damage. It's possible free-radical damage could be the trigger for some cancers and heart disease.

Some animal studies indicate reduced levels of cancer and heart disease with higher amounts of these vitamins, but the picture is not entirely clear.

Human studies may show one group of people with particular eating habits suffers less heart disease or cancer than another, but the difficulty is isolating the reason why. Many factors are implicated in conditions like these — amount of exercise, the whole diet, obesity, smoking, to name only a few. These variables make conclusions difficult, and even within the diet there may be interactions which confuse the issue. (Vitamins C and E may interact beneficially, for example).

Some human studies appear to show definite benefits: many studies of populations indicate vitamin C protects against various cancers; others claim to show reduced heart disease with large amounts of vitamin E — in some cases 160 times the recommended dietary intake (RDI — see *How much is enough?* for more discussion of RDIs). In case

HOW MUCH IS ENOUGH?

MINERAL: A basic constituent of the earth's crust, carried into the soil, groundwater and sea by erosion, taken up by plants and animals. Of the 60 minerals found in the human body, 20 are classified essential.

VITAMIN: "A term applied to a group of substances which exist in minute quantities in natural foods, and which are necessary to normal nutrition, especially in connection with growth and development..." — Black's Medical Dictionary.

Just how minute are the quantities we need of each vitamin and mineral? This is where the recommended dietary intake comes in.

What is the 'recommended dietary intake' (RDI)?

It is the intake of a nutrient that's estimated to be adequate to meet the known nutritional needs of practically all healthy people.

How is it calculated?

Australian RDIs are set by the National Health and Medical Research Council "on the basis of available scientific knowledge". This includes dietary surveys and evidence of illness caused by nutrition imbalance. Because the RDIs incorporate a wide safety margin to allow for variations in metabolism and individuals' absorption of a vitamin or mineral, they may well be greater than the nutritional needs of a given individual. While the RDI is the level to aim for, there is usually no cause for concern until the intake of a particular nutrient falls below 70% of the RDI.

What are its limitations?

RDIs are guides only, and guides for groups of people at that. One individual may have greater or lesser needs than another because of differences in metabolism, illness, eating habits which affect absorption, or lifestyle. For instance:

- Smokers need more vitamin C than non-smokers because they use up more.
- Athletes need more iron as heavy training — and heavy pounding — destroy blood vessels, using up iron.

The level of intake of any vitamin or mineral is not the same as the level in the body. For instance, someone may appear to eat adequate amounts of iron, yet have a low blood level of iron. On the other hand, eating less than the RDI of a particular nutrient doesn't necessarily mean you're deficient.

Some food substances affect the needs or absorption of another. For instance:

- Calcium interferes with the absorption of iron.
- Vitamin C enhances the absorption of iron.
- Zinc encourages excretion of copper.

For some vitamins and minerals how much you need depends on how much you eat in terms of energy (calories or kilojoules). Examples include thiamine, niacin and riboflavin, all used in the release of energy — so if you eat more, you need more of these vitamins.

Minerals ain't always minerals: some come in different forms, some of which are more useful — or 'bioavailable' — to the body than others. The classic example is iron, which is in a more readily available form (called 'haem-iron') in animal products than vegetable products.

As we discuss in this article, if you regularly eat a variety of foods you shouldn't have any trouble taking in enough of each vitamin and mineral for your individual needs.

you're thinking of heading for the supplements yourself, you should note even people touting the benefits of taking supplements of vitamin E warn that the long-term effects of taking such high amounts are not known.

There *is* mounting evidence that eating large amounts of fruit and vegetables is a protective measure against heart disease and some cancers. At this stage it's not possible to pinpoint exactly what it is about the fruit and vegetables that protects — it could be the ACE vitamins, it could be something else we haven't yet isolated.

According to Dr Ivor Dreosti of the CSIRO, you can get protective levels of these antioxidant vitamins by eating five to seven portions of fruit and vegetables each day — and not just greens: go for orange and red ones too.

Is more ever too much?

While research may yet prove there are benefits in eating amounts greater than the RDIs, some vitamins and minerals are dangerous at high doses. Examples of known toxicity include:

- Iron supplements are a significant cause of accidental poisoning in children — some have even died.
- Excessive vitamin A causes loss of appetite, skin problems and eye problems.
- Excess vitamin D may cause high blood levels of calcium, which in turn affects nerve and muscle function — with symptoms including headaches, vomiting and loss of appetite.

Are Australians short on vitamins and minerals?

Based on dietary surveys comparing real individuals' diets to RDIs, the answer for most Australians is 'no'. However, there are some danger spots for women when it comes to iron, calcium and perhaps zinc.

Iron

According to dietary surveys, two in three adolescent girls are below the RDI for iron, and 4% of all women can be classified as iron deficient. Iron intake and the amount of iron in the body are two different things — see *How much is enough?*. Women are more at risk of iron deficiency because of the iron they lose every month when menstruating. Iron deficiency can contribute to fatigue, listlessness and pallor; eventually it can lead to anaemia.

■ **How much iron do you need?**

The RDIs are as follows:

Infants 7–12 months:	9 mg
Children 1–11 years:	6–8 mg
Children 12–18 years:	10–13 mg
Adult men:	7 mg
Adult women 19–54 years:	12–16 mg
Adult women 55+ years:	5–7 mg
Pregnant women:	22–36 mg
Breastfeeding women:	12–16 mg

■ **What's the best way of obtaining the RDI?**

The richest sources of iron are meat and fish and it's also in a form that's highly 'available' to the body in these foods. In plant foods (cereals and vegetables) iron is less available. The following foods provide:

Lamb's liver (fried, 1 slice):	4.4 mg
Chicken (baked, lean, 1/4 chicken):	1 mg

Fillet steak (grilled, 1 small slice):	3 mg
Kidney beans (canned, ½ cup):	2 mg
Spinach (boiled, ½ cup):	2.2 mg
Apple (1):	0.3 mg

But you don't have to eat iron-rich foods to obtain your RDI — your iron may come from a variety of foods. One of our diet-recording volunteers, Norm (see *Take six diets...* opposite), picks up his iron in small amounts from oats, bread and a little from fruit as well as meat and fish. Some chemicals — **enhancers** such as vitamin C found in fruit and vegetables — increase the absorption of iron. Others — **inhibitors** — reduce iron absorption. These include phytates and polyphenols, found in cereals.

Calcium

A national dietary survey carried out in 1983 revealed that 70% of women and 50% of men were eating less than the RDI of calcium. Low dietary calcium is one of several factors thought to contribute to osteoporosis — 'porous bones' — a condition most common in women who've gone through the menopause and who are not on hormone replacement therapy. Other risk factors for osteoporosis include smoking, a sedentary lifestyle and alcoholism.

■ How much calcium do you need?
Your body's requirements depend on your age, sex and activity level as well as other eating habits and your lifestyle. RDIs are as follows:

Children 7–12 months:	550 mg
Children 1–3 years:	700 mg
Children 4–7 years:	800 mg
Boys 8–11 years:	800 mg
Boys 12–15 years:	1200 mg
Boys 16–18 years:	1000 mg
Girls 8–11 years:	900 mg
Girls 12–15 years:	1000 mg
Girls 16–18 years:	800 mg
Adults:	800 mg
Women over 54:	1000 mg
Pregnant women:	1100 mg
Breastfeeding women:	1200 mg

■ How should you obtain your RDI of calcium?
The richest source of calcium is dairy products such as milk, yoghurt and cheese. Other sources include tahini (sesame seed paste), soya bean curd and some vegetables. The following foods provide:

Canned sardines (5, drained):	285 mg
Milk (whole, 250 mL):	350 mg
Cheddar cheese (cube, 2.5 cm):	125 mg
Spinach (boiled, ½ cup):	35 mg
Orange (1):	35 mg

Zinc

Although zinc is often quoted as one of the minerals Australians may be short of, the National Food Authority, for one, suspects the RDI may be too high. What matters is how much zinc is absorbed by an individual, and it seems some people may get enough from a diet containing 6 mg as opposed to the RDI of 8-12 mg. The CHOICE *Quick Guide to vitamins and minerals* on pages 28 and 29 explains what you need zinc for and some good food sources.

Did they make it to your plate?

The peas have been picked, transported to the shop, have sat on a supermarket or greengrocer's shelf, then been cooked — do they still contain their quota of vitamins and minerals?

Minerals are generally stable and survive all processes but vitamins are more sensitive. Some are destroyed by heat or air, others may dissolve in cooking water and be lost unless you use the water for soups or sauces.

Previous CHOICE tests show fresh fruit and vegetables to have the highest levels of vitamins, but frozen is not far behind. In some cases — particularly compared to wilted or bruised produce — frozen comes out better.

For instance, Vitamin C is easily destroyed by oxidation in the presence of water, light or heat; being water-soluble it will also dissolve into the cooking water. Thiamine too is very sensitive to processing.

To retain as many vitamins and minerals as possible when cooking, follow these tips:

- Don't cut up vegetables until the last minute.
- Don't soak vegetables, just wash them before cooking.
- Cook vegetables in as little water as possible or better still, microwave, steam or stir-fry.
- Cook vegetables lightly, keeping them crisp.
- Where possible, use the water you've cooked vegetables in to make gravy, stocks or soups.
- When cooking vegetables, don't add them to cold water then heat up the saucepan. Instead, add them to already boiling water and remember to cover the pan. This reduces cooking time.
- Avoid copper and brass saucepans as some vitamins oxidise more readily with these metals.

Putting it all together

Eat up your greens — and add oranges and reds to that. It's sound advice on any grounds. It increases your chances of obtaining all the vitamins and minerals you need; it means you'll be at least heading towards adequate fibre intake; you are more likely to reduce your fat intake if you are concentrating on eating vegetables; and you may benefit from increased protection from cancer and heart disease at the same time. By eating lots of fruit and vegetables, choosing a variety of foods and cooking with care, you'll get the most from your food.

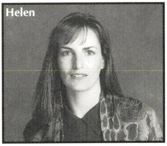
SHOULD WOMEN TAKE EXTRA FOLIC ACID?

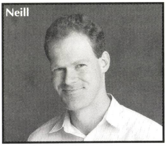
THE BRITISH health department recently advised women planning to become pregnant to take folic acid supplements of 0.4 mg a day. This follows a growing number of studies which have linked folic acid deficiency with neural tube defects (NTD) — birth defects which can result in severe mental and physical disability. A recent study with 2000 women showed 72% of those who'd already had one child with an NTD produced a child without birth defects when taking folic acid supplements. The US Food and Drug Administration also recommends a daily supplement of 0.4 mg for all women as a preventative measure.

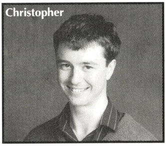
Further research is needed to confirm the effective dose, as different studies around the world have shown benefits from doses varying from 0.4 mg to 4 mg. In Australia, current recommendations, based on the doses available here, are:

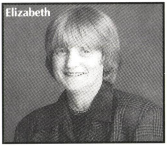
- **All women planning to become or likely to become pregnant** should eat more folic acid-rich foods before conception and in the first three months of pregnancy. Rich sources of folic acid include green vegetables, wholegrain foods, liver, milk and yeast extract.
- **Women in low-risk groups (no family history of NTD)** should also take a 0.5 mg supplement daily.
- **Women with a close family history of NTD (including a previously affected child)** should take a 5 mg supplement daily.
- **Women on drugs to control epilepsy** should consult their doctor about taking extra folic acid as some of these drugs may interfere with folic acid metabolism. The precise action depends on the individual drug.

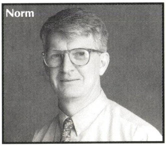
TAKE SIX DIETS ...











WE ANALYSED THE DIETS of six volunteers, who recorded in detail what they ate and drank over 10 days. The results confirm that it's pretty easy to get all the vitamins and minerals you need without being on a specialised diet or taking supplements. As we expected, calcium, zinc and iron showed up as the most likely areas in which diets might need adjusting — especially for women.

■ Being a vegetarian, **Helen** was concerned about iron and vitamin B_{12} — both of which are usually associated with animal products. In fact, vitamin B_{12} is only found in foods of animal origin or in mushrooms grown in horse or chicken manure. Unfortunately the Australian Food Tables used to analyse the diets don't include B_{12}, but looking at Helen's diet her only source is the modest amounts of cheese she eats. See the *CHOICE Quick guide to vitamins and minerals* overleaf for more details on vitamin B_{12}.

As for iron, she obtained the full RDI from legumes, mixed-grain bread and a bran cereal. Helen also ate bread, kidney beans and lots of fresh vegetables. Despite "people always criticising me for being a vegetarian and telling me to go and eat a red steak", her diet gave her the RDIs for all vitamins and minerals covered by the food tables except zinc. "The only way I could get more zinc is by eating more of what I already eat, as the only foods which contain large amounts are meat, fish and cashew nuts." However, as noted in the main article, the recommended intake levels of zinc are suspected by some authorities of being too high.

■ **Neill**, in contrast, was an irregular eater, often missing lunch altogether (just drinking cups of coffee) during this 10-day period. He ate no fresh fruit and relatively small amounts of vegetables. A typical day started with wholegrain cereal, and finished with a convenience food or an omelette. Although his diet might be criticised for other reasons such as low fibre intake, it achieved the RDIs for vitamins and minerals and shows how easy it is to pick up enough of them from different foods throughout the day. He gets vitamin A from eggs, vegetables and dairy products including butter; vitamins from the B group from his breakfast cereal, dairy products and meat; and interestingly, his evening beer provides a significant proportion of his vitamin C intake. We don't recommend you rely on beer for vitamin C, however — especially as alcohol may reduce the absorption of other nutrients. Neill drinks on average almost half a litre of milk a day, which gives him a head start on several vitamins and minerals — 80% of his calcium RDI, a third of riboflavin and potassium, and over a third of phosphorus.

■ **Jane** usually started the day with mixed-grain toast with Vegemite, a cup of tea and a glass of orange juice. At work, lunch was a cheese and salad roll and an apple. Dinner was more varied — maybe fish or chicken with vegetables or a salad. While she got more than the RDI for vitamin C, thiamine, riboflavin, niacin, potassium and phosphorus, her intake was less than 70% of the RDI for zinc, calcium and iron. "If someone can show me how to get more calcium without putting on weight through eating lots of dairy products, I'll consider changing my diet," was her response to the results. If Jane likes them, eating more cottage cheese, low-fat milk and natural yoghurt would boost her calcium intake without tipping her bathroom scales.

■ Before the dietary analysis, **Christopher** didn't know if he was getting enough vitamins and minerals: "I know I don't eat brilliantly. But soon after I started recording, I suspected I'd be all right because I realised I'd be getting about half my RDIs from my breakfast cereal (Weet-Bix)." Although Christopher enjoyed soft drinks, crisps and chocolates, his diet contained fruit, vegetables and complex carbohydrates like pasta and bread too. In fact, even without his cereal — we analysed his diet a second time without it — he was still well over the RDIs, obtaining twice the RDI for niacin and iron.

■ On a typical day **Elizabeth** ate breakfast cereal with milk; a salad roll and fruit for lunch; a meal such as shepherd's pie with vegetables in the evening, often followed by a dessert. However, her diet contained only 62% of the RDI for zinc. Like Jane, she's only interested in changing her diet if it can be done without gaining weight. On the one day she did obtain enough zinc, a piece of beef boosted her usual zinc intake to the RDI. But because the RDIs relate to populations rather than individuals (and because the RDI for zinc may be too high, as discussed), Elizabeth's low zinc intake may not be a problem. However, she's happy to eat more roast beef and turkey, both a good source of zinc.

■ **Norm** ate a varied diet throughout the 10 days, usually starting off with cereal. He ate meat or fish every day, vegetables with lunch and dinner and fruit almost every day. He was just under the RDI for thiamine, riboflavin and vitamin A, but there's no cause for concern until the intake of a nutrient is below 70% — these were around 90%. His zinc intake was 77% of the RDI but he says he's unlikely to change his eating habits: "I'm not going to eat lots of oysters — I don't like them!"

THE CHOICE QUICK GUIDE TO VITAMINS AND MINERALS

Vitamin A

Comes in two forms: preformed vitamin A, including retinol (the form used by the body), or carotenoids such as beta-carotene, which are converted to vitamin A as needed. It's fat-soluble so can be stored in the body. Excessive quantities can cause redness of the skin, eczema, baldness, liver damage and even death.

■ **Function:** Required for healthy: skin; tissues lining the gut and respiratory systems; eyes — especially night vision; fighting infections; bone development.

■ **Good sources:** Liver, carrots, mango and sweet potato (the orange-coloured variety).

THE B VITAMINS

Most of what they do in the body relates to the release of energy from food, and they're essential for enzyme function.

Thiamine (B_1)

Added to bread and some processed breakfast cereals as many processing methods destroy it: boiling, thawing frozen foods and milling, for example.

■ **Function:** Necessary to break down and release energy from carbohydrates.

■ **Good sources:** Yeast extracts (such as Vegemite), bulgar wheat and pork.

Riboflavin (B_2)

Sensitive to light, hence milk stored in a carton retains more riboflavin than milk stored in a clear glass or plastic bottle if exposed to sunlight.

■ **Function:** Important for the way the body uses proteins; also needed for growth and repair of tissues.

■ **Good sources:** Milk and dairy products, offal.

Niacin/nicotinic acid

Deficiency causes pellagra, the symptoms of which are dermatitis of skin exposed to the sun, diarrhoea and dementia (the three 'Ds').

■ **Function:** Needed by the body to use carbohydrates, fats and proteins.

■ **Good sources:** Can either be from niacin itself or an amino acid, tryptophan, which the body converts to niacin. Sources are fish (especially tuna and salmon), meat and nuts.

Pyridoxine (B_6)

Large doses (500 mg or more a day) can cause permanent nerve damage, impairing sensation in the limbs.

■ **Function:** Takes part in reactions by which amino acids are incorporated into body tissues. Also involved in the transmission of impulses in nerves and muscles; important in making red blood cells.

■ **Good sources:** Chicken, fish, liver and meat. Vegetarians: dairy products and nuts.

Cobalamin (B_{12})

Found only in products of animal origin, but deficiency is rare, even in vegetarians. Some B_{12} is made by bacteria in the gut but for most people it's too far down the intestines to be useful.

■ **Function:** Has a role in the chemical processes which go into making DNA, and in the formation of the nucleus of red blood cells.

■ **Good sources:** Foods of animal origin. Vegetarians: dairy products, mushrooms and soy milks fortified with B_{12}.

Folic acid/folacin

When cooked or processed, food can lose up to 70%; when it's reheated, loss is even greater. Deficiency causes a type of anaemia and can also have severe consequences in pregnancy. See *Should women take extra folic acid?* on page 26 for more details.

■ **Function:** Has an important role in forming two vital cell components, DNA and RNA, hence its importance in proper development of the foetus.

■ **Good sources:** Liver, leafy green vegetables; moderate sources include cereals and cheese.

Vitamin C

Easily destroyed by oxygen — even more quickly with light and heat. As it's water-soluble, it leaks into cooking water and can't be stored in the body. Follow the cooking tips on page 26 to preserve as much as possible.

■ **Function:** Has a variety of roles throughout the body in connective tissue, bones, teeth, cartilage and blood vessel walls. Other functions include helping control cholesterol metabolism and promoting the absorption of iron from food.

■ **Good sources:** Fruit such as citrus and tropical, and vegetables, especially green leafy ones.

Vitamin D

Children suffering from rickets or vitamin D deficiency have soft bones, stunted growth and bone deformities.

■ **Function:** Controls the use of calcium and phosphorus, both needed for healthy bones and teeth.

■ **Good sources:** The amount synthesised in the skin in sunlight is enough for most Australians. Otherwise: tuna and sardines.

Vitamin E

Occurs as a group of chemicals known as tocopherols. Deficiency in the general population is virtually unheard of.

■ **Function:** Protects parts of the body, including cell membranes, against deterioration by oxidation.

■ **Good sources:** Avocado, fresh raw nuts and oily fish.

Vitamin K

Since the 1950s, it has been administered to newborns to prevent haemorrhagic disease. Health organisations are reviewing the practice following a study which linked it to childhood cancer. The evidence is far from conclusive and other studies show no link. Further research is needed.

■ **Function:** An essential component of the blood clotting process.

■ **Good sources:** Broccoli, brussel sprouts, spinach. Most foods contain some vitamin K.

Calcium

Growing bodies need more calcium than others, so it's particularly important for children, adolescents, pregnant and breastfeeding women.

- **Function:** Most well known is its role in healthy bones and teeth. Also essential for blood clotting, nerve impulses and enzyme regulation, among other things.
- **Good sources:** Milk, dairy products, fortified soy drinks, tinned sardines or salmon with bones, soya beancurd, spinach — smaller amounts in other vegetables.

Chlorine

Deficiency is extremely rare due to its wide availability.

- **Function:** Important in maintaining fluid balance, and an essential part of gastric juices.
- **Good sources:** Widely available in many foods including fish, meat and dairy products as well foods with added salt.

Chromium

People without it in their diet develop a diabetes-like condition with high blood sugar levels.

- **Function:** Important for glucose metabolism.
- **Good sources:** Meat, cheese and legumes.

Copper

Found in domestic water supplies from the pipes — with higher levels in the hot water supply than the cold. Because too much copper can be hazardous, it's probably best to use cold water and heat it up when making hot drinks like tea or coffee.

- **Function:** Involved in forming blood cells and their absorption of iron. Also assists in production of several respiratory enzymes.
- **Good sources:** Shellfish, nuts and liver (beef and pork).

Fluoride

Fluoridation of public water supplies has reduced dental decay.

- **Function:** Role in healthy bones and teeth.
- **Good sources:** Crude sea salt, seafood, fluoridated water or foods grown or cooked in fluoridated water.

Iodine

Deficiency causes a swelling of the thyroid gland and a condition called goitre. If untreated this can cause mental retardation, stunted growth in children and dry, coarse skin.

- **Function:** Helps form hormones produced by the thyroid gland. These hormones regulate the metabolic rate.
- **Good sources:** Seafood, vegetables grown in iodine-rich soils, meat and iodised salt.

Iron

Deficiency causes anaemia. The form found in foods of animal origin is more easily absorbed than that found in foods of plant origin.

- **Function:** Essential to form haemoglobin, the oxygen carrier in blood; also part of several enzymes and proteins.
- **Good sources:** Meat, especially kidneys and liver, cereals, some vegetables.

Magnesium

As it's so widely available, an inadequate dietary supply is rare. Deficiency can occur because of prolonged vomiting or diarrhoea.

- **Function:** Aids bone growth; functioning of nerves and muscles including regulation of normal heart rhythm.
- **Good sources:** Wheat bran, whole grains, leafy green vegetables and nuts.

Manganese

Deficiency is very rare.

- **Function:** Required for bone growth, reproduction and cell function.
- **Good sources:** Nuts, whole grains, fruit and vegetables.

Molybdenum

The molybdenum content of food depends on the levels in the soil where its plant sources are grown.

- **Function:** Important for normal cell function.
- **Good sources:** Cereals and grains, some green vegetables including peas and beans.

Phosphorus

The only people likely to suffer deficiency are those who've used large amounts of antacids over a long time or who have faulty kidneys.

- **Function:** Aids bone growth and strengthening of teeth, also important in energy metabolism.
- **Good sources:** Found in almost all foods.

Potassium

Potassium needs to be in balance with sodium, otherwise water may be drawn out of muscle cells.

- **Function:** Necessary for muscle function, nerve impulses and some metabolic functions.
- **Good sources:** Fruit, particularly oranges and bananas, and vegetables, particularly peas and green beans.

Selenium

Deficiency is reported in China, causing Keshan's disease, a condition affecting children's heart muscle.

- **Function:** Forms part of an important enzyme which acts as an antioxidant, preventing breakdown of fats to damaging substances.
- **Good sources:** Seafood is by far the richest source, followed by meat and cereals.

Sodium

Although we *need* this mineral we are unlikely to be deficient. For a significant minority of the population, too much sodium can be a factor in high blood pressure.

- **Function:** Contributes to regulation of fluid balance and blood pressure.
- **Good sources:** Occurs naturally in various foods including meat, fish and some vegetables.

Zinc

Vegetarians may be at risk of deficiency as zinc in animal products is more available to the body than that in plant foods.

- **Function:** Required for many functions including protein and carbohydrate metabolism, wound healing, growth and vision.
- **Good sources:** Oysters, meat, eggs and liver. Also found in grains but not in such a usable form.

WHERE SHOULD I GET MY VITAMINS AND MINERALS FROM?

If you'd rather eat food than pills you're on the right track — supplements are for special circumstances, not for every day.

CAN YOU be sure you're getting enough vitamins and minerals from your diet? Isn't it easier to grab for a bottle of pills just to be sure? Is it a good idea to add vitamins and minerals above the levels occurring naturally (called fortification) to processed foods? We look at the options.

Food

■ **FOR**: By eating a range of different food types (meat, fish, fruit, vegetables, milk products and complex carbohydrates such as grains, pasta, bread, etc) you can be pretty sure you're getting enough vitamins and minerals. Each individual food you eat provides you with a range of nutrients. Take an orange. You probably know it contains vitamin C, but did you know it also contains niacin, thiamine, riboflavin (three types of B vitamin), retinol equivalents and carotene (measures of vitamin A), zinc, iron, phosphorus, calcium, potassium and magnesium — as well as fibre, protein and sugar. Food may also contain substances which we haven't yet identified but which are valuable for health. Nutrition is highly complex. For instance, some nutrients interact together, modifying their absorption; some foods contain enzymes needed to help break down food in the body.

■ **AGAINST**: There's no real argument against food as such, but in certain situations it may not be enough. Where food choice is limited for some reason — special diets for a particular illness, for instance — it might not supply the correct balance of nutrients. Food must be correctly stored and prepared to ensure good levels of vitamins. Processing — including cooking — destroys some vitamins.

Supplements

■ **FOR**: Supplements are useful in special cases, under medical supervision. For instance: specialised diets such as elimination diets (where choice is severely restricted for a short time to identify problem foods); conditions such as cystic fibrosis; some cases of pregnancy. Supplements may also be useful in quickly restoring vitamin or mineral levels to normal while correcting a deficient diet. Breastfed babies of strictly vegetarian mothers need vitamin B_{12} supplements.

Public health authorities in a number of countries are recommending women likely to become pregnant take folic acid supplements. See *Should women take extra folic acid?* for more details.

■ **AGAINST**: The normal healthy person does not need supplements. If a deficiency is identified, it is much better to remedy it by changing eating habits, as a deficiency is often a signal a type of food is in short supply in the diet. Food supplies a range of nutrients. As well as the vitamins and minerals it provides important 'macro' nutrients (things we require on a large scale) such as fibre. Often a deficiency in one vitamin or mineral is not an isolated problem but a clue to imbalances in the diet which need more than pill-popping to fix.

A pill-centred diet is a risky one because it depends on today's knowledge of nutrition: nutrition is a young science and we still have a lot to learn. It's also much easier to obtain a toxic dose of a vitamin with a pill than through a natural food source.

Fortification

The Standard for adding vitamins and minerals to foods has been under review for 12 years. A new version — with tighter rules for when and how much can be added — is expected soon.

■ **FOR**: Fortification means adding vitamins and minerals to a food so that the end product contains more than it would normally. This differs from 'restoration', which aims to replace vitamins lost in processing, and which brings the food back to its original nutritional value.

Where significant sections of the community would otherwise be deficient, fortification of foods such as bread with thiamine or breakfast cereals with iron may prevent deficiency — as long as the sector at risk eats the fortified food on a regular basis.

■ **AGAINST**: Fortification cannot replace a healthy diet. It covers only a limited number of nutrients. What about the nutrients not added? As noted, chemicals in foods interact together, one sometimes inhibiting the absorption of another. For instance, the National Food Authority notes, "...there has been an increased number of breakfast cereals in the Australian marketplace which are fortified with calcium. However, this addition may be having a considerable adverse effect on iron absorption and nullifying to some extent the iron fortification of the products."

Fortifying foods may give the wrong impression about the sources of nutrients and does nothing to encourage people to seek a balanced diet from a variety of foods, which is the safest way to ensure the body gets what it needs in terms of vitamins and minerals.

The verdict

You can't beat food. Other options are like putting all your eggs in one basket. Our bodies need many different chemicals — some in tiny amounts, some, such as fibre, in relatively large amounts. Foods contain a host of different nutrients, so if you rely on fortified foods or supplements for some of your vitamins and minerals you are likely to be missing out on the many other nutrients they don't contain.

BESCO
LOW MAINTENANCE
CHAMPION
NS
EXTRA HEAVY DUTY
Lucas
Apollo
N50
46
Century
Heavy Duty
LION
BATTERIES
HEAVY DUTY

CAR BATTERIES

All but one battery in this test lived up to their claims.

YOU PROBABLY don't think about your car battery much except when it won't start your car. A survey last year by the motoring organisations NRMA and RACV of callouts by their roadside assistance patrols found battery problems figured prominently. While a lot of these calls could be attributed to leaving lights or accessories on, nearly 20% of all callouts were to deal with batteries which had terminally failed.

When your battery has failed completely, you're likely to be desperate and buy the first new one you find that fits. The Australian Battery Industry Association says there are things to look for that might warn a failure is on the way: if your battery is over three years old or it has failed to start your car on more than one occasion you should get it checked at an auto electrician. If the battery is on its last legs, you then at least have time to choose a good battery rather than any one that's available.

If you have a medium-sized four or six-cylinder car, our *What to buy* list overleaf will give you a good idea of which batteries can be relied on to deliver their claims.

WHAT WE TESTED

We asked each manufacturer to nominate which of their batteries would be appropriate for a medium-sized four-cylinder car such as a Toyota Camry. However, most of the batteries they nominated were slightly larger and suitable for a six-cylinder Holden Commodore or Ford Falcon too. They will work just as well in both types of car provided they have the right-shaped battery holder.

The batteries were tested against their claims of how well they can start your car on a very cold morning and how long they can keep your car going if the charging system fails. All brands tested except the NS passed the tests. The NS failed both and is not recommended.

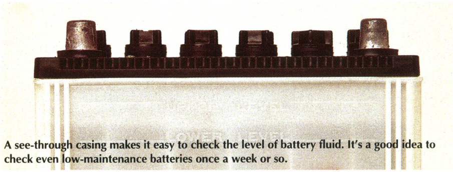
CHOOSING THE RIGHT BATTERY

The size of a battery is usually measured in cold cranking current or amps (CCA). This is an indicator of how well it can start your car on a very cold morning. If your car has a big engine you need a big starter motor to get it going and a big battery to run the starter. A new battery should be able to deliver at least the same amount of current as the original battery supplied by the manufacturer. It should also have at least the same rated reserve capacity (RC), a measure of how long it will keep going without being recharged. These specifications should be marked on the battery itself (although they often aren't). It doesn't matter if you buy a battery with a greater RC or CCA as long as it fits in your car.

Some manufacturers may have batteries with the same CCA but a different rated reserve capacity — in other words, they're claimed to last different amounts of time without a charge. If this aspect is important to you, check when you buy — if it's not specified on the battery the retailer may have a catalogue that tells you.

Some batteries claim to be 'maintenance-free' but this isn't entirely correct. They just require very little maintenance, once every few years or so. In fact, they're sometimes completely sealed so they can't be topped up, but this sort of battery is losing popularity.

Other batteries claim to be 'low-maintenance'. While you shouldn't need to top them up every week, it's still worth checking the fluid level regularly.



A see-through casing makes it easy to check the level of battery fluid. It's a good idea to check even low-maintenance batteries once a week or so.

LOOKING AFTER YOUR BATTERY

Battery maintenance is fairly simple. You should be checking your engine oil and coolant every week or thereabouts, so while you have the bonnet up it's fairly easy — particularly if the battery has a see-through casing (see photo above) — to have a quick look at the battery as well and make sure the fluid is between the minimum and maximum levels. If the level is below the minimum or close to it, top it up, preferably with distilled water. If the battery needs to be topped up regularly, that indicates a problem. The battery could be leaking or it may be overcharging, causing the water to evaporate.

If you find you can't start your car in the morning there are four possible reasons for this:

- The battery is flat because you've left the lights or something else on.
- The battery is flat because the charging system isn't working properly. Check the alternator belt. If it's loose your owner's manual should tell you how to adjust its tension — but don't overtighten it.
- The battery isn't flat but the terminals are dirty or corroded so the electricity isn't getting to the starter motor. Remove the connections from the terminals and clean both with sandpaper or something similar.
- The battery is on its last legs. When you've checked the first three possibilities, take it to a service station and get them to look at it for you.

It's important to remember car batteries contain sulphuric acid and are potentially dangerous. If it gets on your skin wash it immediately and thoroughly; if it gets into your eyes flood them with water then get medical advice. Even if you don't appear to have any acid on your hands after handling a battery, wash them anyway just to be on the safe side.

The battery also gives off explosive gases, so keep all flames and sparks (including lit cigarettes) well away. Be very careful if you ever jump-start your car because this can also cause sparks which could ignite the gases.

The safe way is first to connect the two positive terminals of the batteries with one jumper lead. Then connect one end of the other jumper lead to the negative terminal of one battery (or part of the metal car body) and the other end to a metal part of the other car body well away from the battery. When removing the leads, reverse the order. This way, if any sparks are created, they should be well away from the battery.

If possible recharge your battery using a proper battery charger — a service station will do this for you for a small cost. Slow chargers which give a small amount of current over a long period of time are generally better for a battery than fast chargers which give a large amount of current in a short time.

WHAT TO BUY

LUCAS 255B	$55/$104
APOLLO N50	$65/$72
CENTURY 46]	$68/$87
YUASA N48]	$66/$88
LION 48	$66/$92
BESCO 348	$65/$95
CHAMPION SP350D]	$66/$87
DUNLOP SP350D]	$84/$85
EXIDE SP350D]	$75/$80
MARSHALL SP350D]	$66/$85
MASSE SP350D]	$66/$82

* Prices shown indicate the range found in nationwide checks in July 1993. A square bracket indicates the batteries are the same despite different brand names.

All the batteries we tested except the NS passed the test that checks their cold cranking capacity against their claims, which ranged from 345 to 380 amps. The NS also didn't live up to its claim of 75 minutes' reserve capacity — it only lasted 69 minutes. We've ranked the other batteries according to their measured reserve capacity, but bear in mind other models in the brands tested may be available that have the same cold cranking current specification but a different reserve capacity. In terms of starting your car every day, any of the batteries in the *What to buy* list would be fine — buy on price (if you're in a position to choose!).

Car batteries

Brand/model (in order of measured reserve capacity)	**Manufacturer/ distributor**
LUCAS 255B	Besco
APOLLO N50	Apollo
CENTURY 46]	Century Yuasa
YUASA N48 *(A)*]	Century Yuasa
LION 48	Lion
BESCO 348	Besco
CHAMPION SP 350D]	GNB Australia
DUNLOP SP350D *(A)*]	GNB Australia
EXIDE SP 350D *(A)*]	GNB Australia
MARSHALL SP 350D]	GNB Australia
MASSE SP 350D]	GNB Australia
NOT RECOMMENDED	
NS NS 50ZL	NS

* Prices shown indicate the range found in July 1993.
(A) Clone – not tested.
(B) Manufacturer says the product will be made in Australia from later in the year.
(C) Values are not marked on the battery.

▨ CLONES

According to the manufacturer, the **YUASA N48** is from the same production line as the **CENTURY 46** battery tested, so we've included it in our table as a clone, indicated by a square bracket.

The same applies to the **CHAMPION**, **DUNLOP**, **EXIDE**, **MARSHALL** and **MASSE** batteries. According to their manufacturer, they are identical for the size of battery we tested, although not necessarily for all sizes. We tested one sample each of the **CHAMPION**, **MARSHALL** and **MASSE** batteries. The results were similar so we have included **DUNLOP** and **EXIDE** in the table as well, assuming they will perform comparably. The results given for each of these five brands are the averages of the three brands tested.

☐ PERFORMANCE

Our tests are based on those in the Australian Standard for car batteries, AS 2149. We performed two tests, one to determine whether the battery can start your car on a cold morning and the other to see how long it would keep your car going if the charging system failed.

The two tests were performed on three samples of each brand of battery, except for the **CENTURY** and **YUASA**. We only tested two samples of the **CENTURY** battery and averaged the results to represent both **CENTURY** and **YUASA**. For all other brands, the results given in the table are the averages of three samples.

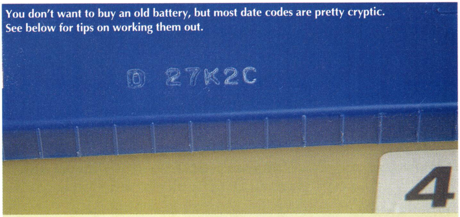
Car batteries

Origin	Warranty	Price* ($)	Dimensions L x W x H (mm)	1 Cold cranking current (amps)	2 Cold cranking test	3 Reserve capacity (minutes): rated	measured	Brand/model (in order of measured reserve capacity)
New Zealand	1 year	55/104	240 x 170 x 190	345	Pass	80 *(C)*	99	**LUCAS** 255B
Taiwan *(B)*	2 years	65/72	225 x 170 x 185	380	Pass	85 *(C)*	88	**APOLLO** N50
Australia	1 year	68/87	225 x 165 x 185	360	Pass	75 *(C)*	83	**CENTURY** 46
Australia	1 year	66/88	225 x 165 x 185	360	Pass	75	83	**YUASA** N48
Korea	1 year	66/92	220 x 165 x 190	375	Pass	80	82	**LION** 48
Australia	1 year	65/95	220 x 170 x 190	350	Pass	70 *(C)*	81	**BESCO** 348
Australia	1 year	66/87	225 x 170 x 185	350 *(C)*	Pass	70 *(C)*	73	**CHAMPION** SP 350D
Australia	1 year	84/85	225 x 170 x 185	350	Pass	70	73	**DUNLOP** SP350D
Australia	1 year	75/80	225 x 170 x 185	350	Pass	70	73	**EXIDE** SP 350D
Australia	1 year	66/85	225 x 170 x 185	350 *(C)*	Pass	70 *(C)*	73	**MARSHALL** SP 350D
Australia	1 year	66/82	225 x 170 x 185	350 *(C)*	Pass	70 *(C)*	73	**MASSE** SP 350D
								NOT RECOMMENDED
Indonesia	1 year	60/125	225 x 165 x 190	375	Fail	75 *(C)*	69	**NS** NS 50ZL

1 Cold cranking current
To start your engine, you need a certain amount of current from your battery to make the starter motor spin strongly enough to get the engine going. The exact current needed varies depending on how cold it is outside, so it is usually measured at very low temperatures and hence called cold cranking current, measured in amps (CCA). The bigger the engine in the car, the more current you need to get it going. Cars with small engines, like Lasers, generally need a battery with a specified CCA of around 280 A. Medium to large-sized cars, like Camrys and six-cylinder Commodores and Falcons, need batteries with a CCA of about 350 A, like the ones in this test; you can use them in smaller cars too as long as they fit in the battery compartment. Some cars need still bigger batteries.

2 Cold cranking test
This test, from AS 2149, is quite severe but is meant to determine how well the battery will start your car on a very cold morning. The battery is refrigerated to –18°C and then discharged at its cold cranking current for 30 seconds. If the voltage is less than 7.2 V, it fails. One brand, the **NS**, failed this test on all three samples. While it's an extreme test for most Australian conditions the other batteries passed, so there's no reason the **NS** shouldn't.

3 Reserve capacity
If your charging system fails (a dashboard light will come on), you want the battery to keep the car going till you can get it fixed. In this test, also from AS 2149, the battery is discharged at a constant current of 25 A until the voltage drops to 10.5 V. The time taken is the reserve capacity (RC) in minutes. One brand in this test, the **NS**, failed to meet its claimed RC consistently.


You don't want to buy an old battery, but most date codes are pretty cryptic. See below for tips on working them out.

CRACKING THE DATE CODE

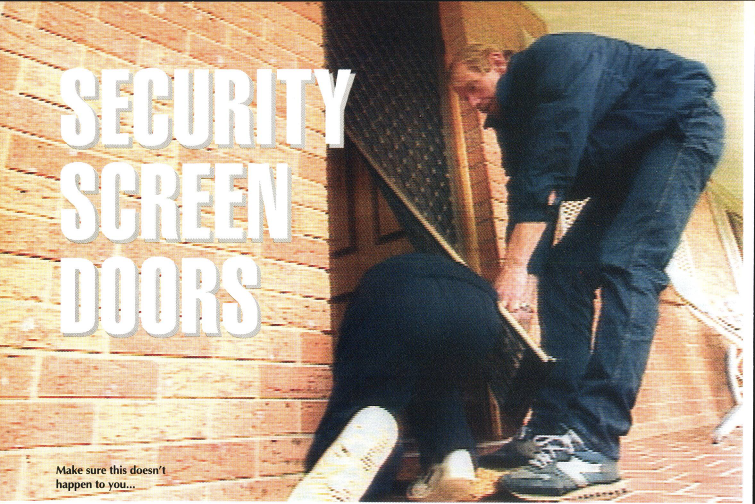
IF YOU'RE FORCED to buy a battery in the middle of nowhere, you'll want to avoid one that's been sitting on the shelf for a few years. Our sister magazine in the US, *Consumer Reports*, reported in its battery test that one of its staff members had bought a five-year-old battery without realising how old it was, and there's no reason to assume Australians couldn't fall into the same trap. In fact the serial codes stamped into the plastic on the top of a battery should tell you how old it is, but they're not always easy to decipher.

Most codes tell you the year and month of manufacture. In many cases the year is marked by a single digit (3 is 1993, 9 is 1989, etc) and the month is marked by a single letter (A = January, B = February, etc; some codes skip the letter I so M = December). Batteries made in August 1993 will be marked H3 or 3H, for example.

However, these combinations are often surrounded by a collection of other letters and numbers. For example a battery coded B20H3C could have been made in February 1992, August 1990, August 1993 or March 1993, depending on which letter-number combination you look at. However, two numbers are often used to signify the day of manufacture as well. Although it's not particularly useful to know this in itself, it may help you locate the month-year code. So our previous code B20H3C probably represents a battery made on August 20, 1993.

Two batteries in this test had numbers for the month. The **NS** has a single digit for the year followed by two digits for the month. If the serial code begins 308 it was made in August 1993. **APOLLO** is simpler still. It has a letter followed by two digits for the month and two digits for the year, so a battery marked A0893 was made in August 1993.

SECURITY SCREEN DOORS



Make sure this doesn't happen to you...

Photo courtesy of The Investigators

Will your security door keep out intruders? We tell you what to look for and how much to expect to pay.

SCREEN DOORS are a traditional feature of Australian homes. They allow the air to circulate through the house in hot weather, and at the same time keep toddlers in and flies and pets out. But they are easily broken into — the fragility of screen doors is something insurance assessors and police see on a daily basis — hence the need for *security* screen doors.

Shonky sales

Unfortunately it's easy to make a screen door look as if it offers more security than it does, which provides an opportunity for unscrupulous traders to undercut their competitors by selling 'security' doors which look like the real thing yet can be sold more cheaply because they haven't got the expensive — but often internal and so not visible — security features of a real security door. You'll find screen doors on offer from around $90, but it's unlikely any of them would have all the security features required by the Australian Standard for much under $500.

Another difficulty for the buyer is that not all doors that meet the requirements of the Standard carry the StandardsMark — it's a promotional tool not all manufacturers decide to pay for even if their doors do comply. So the industry makes the most of opportunities for advertising hype the buyer can't verify — for example, statements such as "All our doors pass the grille requirements for the Australian Standard AS2803". Assertions like this usually mean the rest of the door doesn't — which in turn means the door would be unlikely to pass the strength tests of the Standard. There are lots of components to consider — the Standard lists at least another seven which need to comply with security requirements: hinges, corner joints, door framing, screws, rivets, the lock, and the lock fitting. All these things together give a considerable resistance to an attacking force.The grille is just one consideration.

We found another advertising practice to beware of in the Sydney Yellow Pages — a retailer advertising his doors as being "recommended by a major insurance company" told us his products were recommended by the NRMA. The NRMA, surprised and understandably annoyed, says it does not endorse any particular brands, and is looking at taking legal action.

Will it keep out intruders?

A security door is intended to protect you against unwanted visitors *when you are home.* It was never designed to prevent your house from being burgled in your absence (although, of course, the more difficult you make it for burglars to get in the more likely they'll look for an easier target).

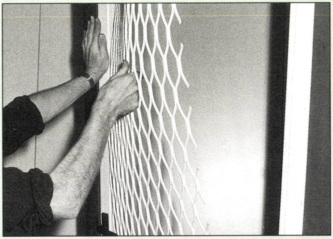
A good security screen door — one which complies with every aspect of and is installed according to the Australian Standard — will provide sufficient personal protection for most domestic situations.

It will enable you to leave the front door open while you're out at the clothes line or in another part of the house, knowing that no-one could break in in a hurry and certainly not without making

CHECKLIST: WHAT TO LOOK FOR

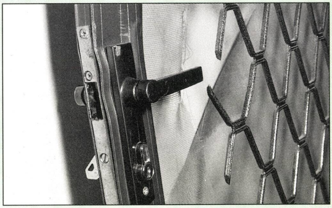
No security — essentially just a flyscreen holder

Price range: $99–$300
May be called 'heavy-duty' but this refers more to durability than security.
Locking: Only one locking point.
Frame: The grille sits in a comparatively shallow receiver channel (compare the depth to those doors carrying the StandardsMark). Corner reinforcing made of plastic or other lightweight material. No rivets holding corners in place.
Grille: Lightweight (may even bend when you apply pressure). The grid is often referred to as 5 mm mesh, though more expensive doors feature 7 mm mesh, and may appear to be strong. Don't take this as a measure of the door's security — that depends on many factors. Grille held in place by comparatively few (if any) aluminium rivets.
Hinges: Only two hinges.
Workmanship: May be poor — rivets may not even engage the grille.


Doors like this with a grille that's easily bent and pulled out of the frame shouldn't be regarded as more than a flyscreen.

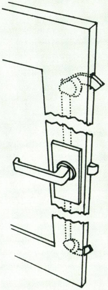
Possible security — buyer beware!

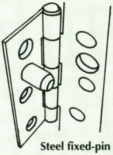
Price range: Part of the 'buyer beware' area: you can't rely on price as a guarantee of security features, though probably a door in the $300–$450 price range will offer some or all of those listed below. Often referred to as 'middle-weight', many are really only heavy-duty flyscreen doors, but some in this range can offer a minimal degree of security providing they have the following features:
Locking: Three-point locking which will stop an intruder peeling back the top or bottom of the door and crawling through.
Frame: Heavy, but check corner joints (see *Frame* below).
Grille: Sits deep in the frame in a wide channel so it will hold fast in the frame when pounded or kicked.
Hinges: At least three hinges, but probably no fixed steel pin (see below).
Workmanship: May be poor — for example, check to see the rivets are pinning the grille to the frame.

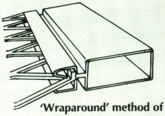

This frame and lock may have looked rigid and strong enough, but under pressure they can be bent and the grille pulled out.

Best for security — complies with Australian Standards

Price range: Unlikely to be much cheaper than $500
Preferably carries the StandardsMark and/or is sold and installed by retailers carrying the ASIAL (Australian Security Industry Association Limited) logo (see overleaf). Such retailers undertake to supply and fit only those security doors which comply with the Standard. One or the other logo is a major sign of the door's security.
Locking: Three-point locking as above. Locking from both sides of the door. (Some buildings are subject to fire regulations and do not permit double locks on some doors — such as those at the front of a block of units — so check before installation.) Ideally, it will also have a 'fast-lock' button.
Frame: Strong rigid frame. Corner joints which are rigid and designed so as not to loosen with use over time or under attack. Resistant to considerable jemmying force.
Grille: Sits deep in the frame as above; some are fastened by a wraparound method so there's no risk of badly aligned rivets, though a door with properly fitted rivets is just as secure.
Hinges: At least three sets of hinges with fixed steel pins which will prevent the door being jemmied at the hinges.
Workmanship: Installation guaranteed to comply with AS 2804.


One type of three-point locking system


Steel fixed-pin hinges


'Wraparound' method of fixing grille into frame

a lot of noise. In many cases it will be stronger than your outside door — although the Standard makes it clear it is not intended as a substitute.

What to look for

Look for doors which bear the StandardsMark or buy from a retailer who displays the ASIAL (Australian Security Industry Association Limited) logo.

Australian Standard

ASIAL
MEMBER AUSTRALIAN SECURITY INDUSTRY ASSOCIATION LIMITED

Our checklist on page 35 also gives some clues on visible security features to look out for.

A retailer who is a member of ASIAL undertakes not to sell doors as security or safety doors unless they meet the Australian Standard. They are also supposed to ensure the doors are installed according to the Standard.

If you live in WA you are already somewhat protected by your state's legislation, which makes it illegal for anyone to install a security screen door for you unless they are licensed by the police. One condition of that licence is that any security screen door installed by the licensee is manufactured and installed according to the Australian Standard.

The Standard allows for two types of security door: type I has a grille in which the openings are generally too small for anyone to put their arm through; type II has larger openings (so although someone could get an arm in they could not climb through). Type I doors may be either steel or aluminium, whereas type II doors are usually made of steel. If a door complies with the Standard it doesn't matter whether it's made of aluminium or steel, despite what sellers might try to make you believe.

We suggest if you buy a door with the larger openings in the grille you make sure you don't leave the keys in the door where they can be reached and manipulated by an intruder. Keep the keys near the door so you can get out fast if you need to, but out of reach of a would-be intruder.

Before you agree to buy a security door, insist the retailer gives you a *written* guarantee the door you will buy complies with *all* the requirements of Australian Standard AS2803 — despite anything the brochures say, or what the salesperson tells you. A verbal assurance will become simply your word against theirs, and cold comfort after a break-in.

As well you will need a written assurance that the door has been installed according to all the requirements of Australian Standard AS2804.

If the retailer dismisses these requests, or tries to side-step them, deal with someone else!

Installing your door

A security screen door is only as effective as its installation. Using unsuitable fastenings or installing the door into a weak door frame can seriously undermine its ability to resist force. The person installing the door should assess the strength and suitability of the door frame as well as ensuring the door is fitted securely.

Ideally, the door frame should be reinforced with a wraparound metal jamb. This might reduce the overall width of the doorway — potentially a problem for getting appliances and furniture in and out, or wheelchair access. Although the Standard doesn't specify how a door frame must be constructed, most door jambs will require some strengthening to enable the door and its installation to pass the strength tests. If the door frame in your home is made of reasonably thick hardwood and is in good condition this extra reinforcing may not be necessary.

It's also important any gap between the door and frame at the hinges and locking point should not be bigger than 4 mm, to reduce the opportunity for jemmying the door. Any gap at other points should not exceed 6 mm — unless the floor is uneven, in which case a slightly bigger gap in places along the bottom is acceptable.

And how much to pay ...

Proper security doors are expensive — manufacturers say you can expect to pay around $500 (including installation).

A middle-priced door (around $340) *may* give you adequate security, but as noted earlier, not all security features are visible. You wouldn't know just by looking, for instance, what corner reinforcing had been used in its manufacture, and how well the grille had been fixed to the frame.

Careful workmanship is vitally important. One trader showed us a door which had cost its owner around $300, yet an intruder had been able to kick the grille out of the frame because the rivets supposedly fastening the grille to the frame had not actually penetrated the grille. Yet to all appearances the door had appeared sound when it was installed. Some grilles are fastened to the frame by a wraparound method, which avoids this problem. Use our checklist to ask the retailer questions about the door's construction, preferably getting the answers backed up by cutaway models of the door.

The extra cost of security screen doors which comply with the Australian Standard comes from their additional strength: reinforced corners (cheaper doors use plastic corner reinforcing instead of metal, which could break open if the door is kicked or pounded), built-in protection against hinge-pin interference, a triple locking system or a reinforced frame (cheaper doors have only one locking point), a heavier grille (cheap doors have thin metal grilles which can be easily bent or cut), and better-quality rivets to hold the grille to the frame — stainless steel rivets are claimed to be three times stronger than ordinary ones. The number of rivets can also be important in a door's overall strength — especially if the receiver channels holding the grille in the frame are not particularly deep.

You'll also be paying for a made-to-measure fit — critical for secure installation. Cheaper doors are usually only available in standard sizes. If your doorway is not a standard size — and most doorways aren't square anyway — the gap between the security screen door and the door frame will make it easier for an intruder to jemmy it apart.

So when buying, know what you want. If that's real security, use our checklist to help you get it. And if all you want is a flyscreen, don't pay over the odds! ❑

SLIDING SECURITY SCREEN DOORS

The Australian Standard at present only covers hinged security screen doors. A Standard for sliding doors is currently being drafted, but will take quite some time before it is finalised. Sliding doors present a security problem because of the inherent weakness in having a fully exposed edge. If you need to protect a sliding door entrance against unwanted intrusion it's important to deal with someone who is experienced in security work. A retailer who is an ASIAL member is a good start.

SUBSCRIBE

The 9th CHOICE Subscriber Draw

For new subscriptions and renewals received July 1 to September 30, 1993.

Subscriber draws are now held quarterly and on October 1 we'll be holding our ninth. The lucky winner will be able to choose any two products from the following tests published January 1993 to March 1993.

☐ Barbecues (January 1993)
☐ Washing machines (January 1993)
☐ Water filters (February 1993)
☐ Compact cameras (February 1993)
☐ Dishwashers (February 1993)
☐ VCRs (March 1993)
☐ Computer printers (March 1993)
☐ CD players (March 1993)

These are products we bought for testing, so you won't be the first to turn them on or set them up. But we'll cover any service problems with a CHOICE warranty that'll match the manufacturers' — just as if you'd bought them new.

All new CHOICE subscriptions and renewals received from members and personal subscribers (including donors of gift subscriptions) by September 30 will go into the draw, unless of course you indicate you don't want to be included.

(If you're not due to renew your subscription during the period, don't worry, we'll be holding other draws during the year — your renewal notice will have the details. And if you're on a two-year subscription you'll be entered on your first anniversary as well as when you renew again.)

✍ Use the order form overleaf ☞

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3. Employees, and their immediate families, of the Australian Consumers' Association and its associated companies and agencies are ineligible to enter.
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5. Applications are subject to a verification check and judge's decision is final. No correspondence will be entered into.
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8. South Australian residents may enter the draw by completing the form and posting to: Reply Paid No. 13, ACA, 57 Carrington Road, Marrickville NSW 2204, without subscribing to the magazine. Only one entry per person is permissible through this method.
9. Last date for receipt of entries to the draw is September 30, 1993. No responsibility accepted for lost, late or misdirected mail.
10. The draw will be conducted at the office of the Consumers' Association at 10 am on October 1, 1993.
11. The winner will be notified by letter and published in the December 1993 issue of CHOICE magazine.
12. The promoter is Australian Consumers' Association, 57 Carrington Road, Marrickville NSW 2204. NSW Permit No. TC93/1961, VIC Raffles & Bingo Permits Board Permit No. 93/1264 issued on 11/5/93, ACT Permit No. TP93/0768 issued under the Lotteries Ordinance, NT No. NT93/0603.

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requested by students and teachers who r
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CHOICE Safer Domestic Pest Control
Advice: **0055 2001**
Calls attract a rate of 55 cents per minut

BEST FAMILY WASHING MACHINES

The new Fisher & Paykels and a top-loading front loader(!) are part of our most recent report on 79 washing machines.

WHAT'S NEW in washing machines? Here, for the first time, we report on a type of washing machine popular in Europe and Asia, but new here: the top-loading front loader. It's got a horizontal drum and a front loader action, yet the door's at the top. Is it the best of both worlds? See *What?! A top-loading front loader!* below.

In our last report (January 1993) we were unable to include **FISHER & PAYKEL** washers as the range changed too late to meet our purchase deadline. Here at last is the information — and they've performed very well. In fact the **FISHER & PAYKEL Smart Drive GW700** is the best-performing top loader, followed closely by the other two **FISHER & PAYKELs** and the **HITACHI PAF 1220P**. Even newer **FISHER & PAYKEL** machines are coming, but we're informed they are technically similar to those reported on here though including some new features.

TOP OR FRONT?

As we've said many times in the past, front loaders are better washing machines than top loaders. They spin faster and most leave clothes drier. They're also more gentle to clothes and use less water and electricity to run.

On the downside, many are relatively expensive to buy and install, and their cycle times are long compared with top loaders — and once the water level rises above the door it's impractical to add forgotten clothes. Not all front loaders allow you to adjust the water level for small loads, so if you regularly run your machine only half-full, check for this. The extra detergent and water used unnecessarily add to your costs over time.

Top loaders are cheaper and generally speaking wash just as well, but use more water and electricity; they do more damage to your clothes, too.

To help you find the best model we've brought together test information on virtually all medium to large (4-7 kg load) automatic washing machines available, costing less than $2000. This excluded some very expensive new Mieles and two Sanyos with small load capacities.

IN THE WASH

We tested the machines for how well they washed ('soil removal'), spin efficiency, water and energy efficiency, and gentleness. Details of these tests are given on page 41. Almost all gave acceptable washing results — look for a soil removal score of 80% or more — but there were big differences in spin efficiency (how dry the clothes end up), water/energy consumption and gentleness.

WHAT?! A TOP-LOADING FRONT LOADER!

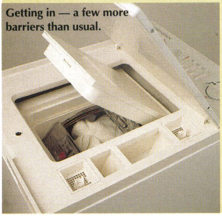
A HYBRID has come to life in the laundry! The photo shows a new type of washing machine which combines top-loading access with front-loading action and a horizontal drum. You load clothes from the top but enjoy the benefits of a front loader's action — gentleness, and better spin, water and energy efficiency. It's a new product in Australia, though some readers may recall a similar type of washer from the 1950s.

A big plus of these machines is that they're much more compact than traditional front loaders as well as narrower than normal top loaders, so will fit into smaller spaces. They don't have to be plumbed in permanently, and are fitted with wheels (and a locking brake) so you can move the machine out of the way when not in use.

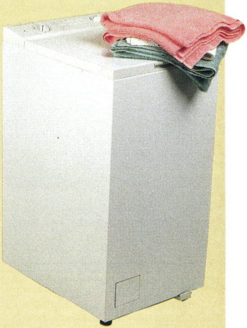
How do you get inside? Beneath an outer door is a pair of spring-loaded, stainless steel inner doors. The size of the opening for loading clothes is not generous, but really it's not much different from an average front loader. One annoying feature is that when the wash cycle finishes the inner doors don't always face the top position (that is, directly under the outer door). You may have to rotate the loaded and heavy drum by hand before it's in position to be opened.

How well do they wash? Unfortunately the **BENDIX PCA 84E** was a disappointment. Its soil removal score was low (only 69% when we suggest you look for 80% or more), and despite the wheels it wasn't particularly easy to manoeuvre. As well as the usual two sets of doors, the **BENDIX** has a third door — it's a nuisance dealing with so many barriers.

However, we've tested other top/front loaders — not yet available in Australia — and know you can do better than this **BENDIX**. If you're interested in this new style of washer, wait if you can for new models (and the CHOICE test).



Getting in — a few more barriers than usual.



At around 150 mm narrower than most other machines they're great for small spaces — but this Bendix didn't wash very well.

This time we've updated the report with test information on 10 new models. Here are some points of interest:

- **Great spin for a top loader:** The **FISHER & PAYKEL** machines had unusually high spin speeds for top loaders (1000 rpm) and scored highly for spin effectiveness.
- **Water efficiency:** If every drop of water is precious to you, then the front-loading **THOR L692RX** is the one to buy — it gave the best water efficiency per kilo of clothes.
- **Small wash load:** If you've only got a small load to wash, can you reduce the amount of water used by the machine? Many machines allow you to set the level manually, but the **AEG Öko Lavamat 600** and **SANYO ASW 602AP** adjust automatically to a small load.
- **Favourite cycle:** The **FISHER & PAYKELs** have a feature that lets you store function details of a chosen cycle for recall at the touch of a button. This can be very convenient if you keep forgetting how to set a particular cycle.
- **Tangled clothes:** The **SANYO ASW 602AP**, which is a top loader with impeller action, twisted our wash load into a rope.
- **Production faults:** Two out of three **FISHER & PAYKEL** machines arrived with faults. The **FISHER & PAYKEL 500** required a new electronic circuit board twice! The **FISHER & PAYKEL 700** needed a new lid due to poor circuit contact. Fisher & Paykel is investigating these faults. The **SANYO ASW 602AP** came with a dent in the plastic exterior.

OUT OF BALANCE

For the first time we tested the 10 new machines (and the nine still available from the January test, both groups marked with a # in the table) for their ability to cope with an out-of-balance load. We also carried out a linting test to see if any models left more lint on clothes than others did.

If your washing machine vibrates so much when spinning it moves across the floor, an unbalanced load is probably the cause. Some machines are clever enough to deal with this problem, either by stopping when just into the spin cycle or by adding more water to refloat the clothes.

Note that water consumption to achieve this may be startling: the **FISHER & PAYKEL 700** bucketed in an extra 166 litres of water in repeated (unsuccessful) attempts to refloat the out-of-balance load (sounds like Disney's Sorcerer's Apprentice, doesn't it?). This was as much water as it needed to do the whole wash in the first place, and in the end our tester still had to plunge her hands into the tub and rearrange the load. You may prefer a less sophisticated machine which simply stops when faced with this problem.

For the 19 machines tested for this, we attached a weight to one side of the machine's drum, placed the machine on a 1° slope and set the program to spin.

The most dramatic walker was the **HOOVER 1500** (and its clones — see the table), which travelled a circular path of around 50 cm in total distance in less than one minute. Hoover has responded

FOR PEOPLE WITH DISABILITIES

The washing machines were assessed by an occupational therapist from the Independent Living Centre.

In general, front loaders are more convenient for people in wheelchairs or for those who find it difficult to reach down into a top loader and pull out the washing. The **MIELE** machines have a door which opens right out of the way (back against the machine) which is a good idea.

Some top loaders are more accessible than others to those in a wheelchair or with a bad back. Try the **FISHER & PAYKEL Smart Drive GW500** or **GW600** where the drum is not too deep.

Those with hand disabilities should look for dials with a crossbar or buttons which protrude from the control panel's surface, are easy to press and which stay in easily when pressed. Good controls and easy door levers are on these front loaders: **BOSCH WFM 3010** and the **HOOVER Electra 540** and **545**.

Of the top loaders, the **FISHER & PAYKELs, HITACHI PAF 1260PX** and **SAF-2000PX** and **KLEENMAID KAW 693** have push controls that are easy to operate. Rotary controls on the **HOOVER 1500** (and its clones — see table) and **MAYTAG A9400** and **A9800** are easy to grip.

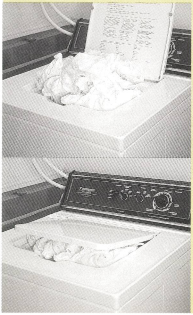
People with a visual disability require large, clear markings or machines that can be tagged with Braille markings. Examples include the **BENDIX L43RX** and **L105RX**, the **BOSCH WMV4280, IGNIS 6AWL305** and the **WHIRLPOOL 6AWG384** and **6AWG354**.

OVERLOAD!

MANY CONSUMERS welcome washing machines with extra-large capacities. They may also be better for the environment if they wash more clothes for the same amount of energy and water used. However, as reported previously in CHOICE, not all load claims are justified.

In January we reported on test results which showed the **KLEENMAID KAW 651** couldn't take the load of 7.5 kg claimed on the compliance plate attached to the machine. Kleenmaid got in touch and explained the plate was based on the US Standard — for its Australian energy label the manufacturer only claimed a capacity load of 5.5 kg. Accordingly a correction was published in the March edition of CHOICE.

When we saw an ad in June promoting the new **KLEENMAID KAW 693** as having 7 kg capacity we were interested to see how it would perform with that load. Our test load is as specified for different capacities in the Standard — for 7 kg it's a mixture of shirts, towels, sheets, tablecloth, T-shirts, pillowcases, handkerchiefs and underpants such as a consumer might want to wash. As you can see from the photos, with this load we couldn't even close the lid properly, so there was no point trying to wash with that load size. As a consumer would be likely to do in this situation, we reduced the load to a reasonable maximum, which brought its size down to 5.5 kg. We tested the machine on its 'normal' warm wash at this capacity and it scored only 71% for soil removal, as shown in the table — well short of the 80% specified in the Standard. Even with the load further reduced to 5 kg, the **KLEENMAID** only managed 75% soil removal. In an attempt to replicate the manufacturer's claims, we squashed the 7 kg load into the machine and ran it on its 'Extra Clean' wash cycle, which washes it for 15 minutes (compared with eight minutes on the 'normal' cycle); it scored 72% for soil removal.



to our results, saying it was aware of the problem and has taken steps to correct it.

Others with a minor tendency to move were the **MAYTAG A9400** and the **WHIRLPOOL 6AWG384**.

LINT

It's disappointing to wash a load of clothes only to find them covered in fine lint. Are some machines worse than others? We placed black socks amongst a white washing load. Our conclusion is that front loaders as a class leave distinctly less lint on clothes than do top loaders. However, there was no conclusive evidence that some models dispose of lint better than others.

WARRANTIES

Manufacturers are starting to compete on the length and terms of their standard warranty, so don't ignore the issue when buying a new washing machine.

The most extensive standard warranty comes with the **MAYTAGs** — five years, with 10 years on the transmission. Check the table footnotes for details on other models.

Additionally it's possible to purchase an extended warranty at extra cost at the time of purchase.

CONCLUSIONS

Front loaders remain the best washing machines overall. Top loaders wash as clean as front loaders, but tend to lag on every other test: gentleness, spin efficiency, energy and water efficiency. But when it comes to convenience you'll have fewer complaints with a top loader — they're quicker, you can add or take out clothes during the wash, and more large-capacity models are available — 6 kg wash load, or even 7 kg with the **FISHER & PAYKEL GW700**. The **THOR L692RX** was the only front loader to take 6 kg.

Once you know what type you want, choose from models near the top of the table overleaf. If price is a limiting factor, we've listed our **Best Buys** on the right.

Finally, don't forget to check with the table for the dimensions of the washing machine (to fit your space), the wash cycle time (which can be an hour and a half or more on some front loaders) and the tap/heater connections required.

BEST BUYS

Best Buys take into account cost as well as performance. They're taken from the top of the table so overall are good performers — 67% or more overall score. However, machines with poor performance in a particular area (such as the **SANYO ASW 620AP**, which turned the clothes into a rope, and the **IGNIS 6AWL305**, whose spin efficiency was only 41%) were excluded.

FRONT LOADERS	
BENDIX L43RX (with heater)	$1120/$1399
HOOVER Electra 540	$869/$948
HOOVER Electra 545 (with heater)	$929/$999

TOP LOADERS	
FISHER & PAYKEL Smart Drive GW700	$1024/$1100
FISHER & PAYKEL Smart Drive GW500	$845/$900
FISHER & PAYKEL Smart Drive GW600	$954/$1000
HITACHI PAF 1220P	$840/$948
HITACHI SAF 2000PX	$1119/$1324
SIMPSON Concorde 36C527S	$669/$899
SIMPSON Deluxe 36C526S	$679/$729
SIMPSON Genesis 36D525S	$618/$699
SIMPSON Genesis 36D528S	$765/$835
SIMPSON Riviera 36D427S	$699
WESTINGHOUSE Laundromat LD555S	$699/$704

If you want a top loader with a heater, you have only one option:

HOOVER Elite 1225	$1010/$1158

* Prices indicate the range found in nationwide checks in July 1993. Price includes installation for the Bendix and Hoover (front loaders).

The notes below relate to the numbered columns in the table starting overleaf.

▨ **CLONES**
Some machines are identical in performance though sold or badged under a variety of names and with different features. Such 'clone' groups are indicated in the brand-name column by a square bracket to the right of the names. Different features and wash programs also account for differences in price.

1 **Wash load (claimed/tested)**
We attempt to wash the load size claimed by the manufacturer, but if it won't fit reasonably into the machine we reduce it to what we consider to be a load size that a consumer would be likely to regard as sensible, weigh it, then adjust it to the nearest 0.5 kg lower. This is the 'tested' load to which our results apply.

2/3 **Tap connections/heater**
If the machine needs both hot and cold water taps we've marked it 'H&C'. If you've only got a cold tap in your laundry, choose a machine which doesn't need a hot connection: 'C' or 'C/H&C' — plus a heater if you prefer to wash in warm water.

4 **Warm wool rinse**
The Australian Wool Corporation recommends a warm wash with a warm rinse for woollens; we've noted machines with this cycle option.

☐ **PERFORMANCE**
Washing machines were tested on the normal warm wash cycle (40℃) using detergent quantities based on the Australian Standard. Though we haven't tested all the machines with a cold wash, we believe soil removal comparisons will remain the same.

We tested 10 new machines this time and have added them to performance data from previous tests for other models that are still available.

5/6 **Water used/water efficiency**
Water efficiency was calculated by relating the amount of water the machine used per kilogram of wash load to a 'worst case' of 50 litres per kilogram (50 L/kg would score zero). For example, the **THOR L692RX** and **WHIRLPOOL 6AWG354** used the same amount of water for a normal wash, but the **AEG** is more water-efficient because it will handle a larger load (6 kg as opposed to 4.5 kg) for the same amount of water. When choosing a machine, bear in mind you'll have it for the next 10 or more years and water prices seem likely to go up significantly in most places during that time.

7 **Energy efficiency**
We measured energy efficiency on the basis of kilowatt hours (kWh) of electricity used for each kilogram of a load of washing, including heating the water (whether by the machine's own heater or by your household hot water system), which is the main component of energy use. If you only wash in cold water you don't need to take these results into account.

8 **Gentleness**
Swatches of easily frayed embroidery fabric were attached to garments in each wash load. After three wash cycles the unfrayed area of the swatch was measured and compared to its original size. Machines were rated as more gentle according to the percentage of unfrayed material. Some newer designs of top loader show improved performance in this test: look for a score of 70% or more.

9 **Spin efficiency**
Spin efficiency was calculated from the amount of water remaining in the clothes after the wash cycle was complete.

10 **Soil removal**
Soil removal was tested by comparing the amount of light reflected by test swatches of soiled fabric before and after washing. The Australian Standard requires the percentage of soil removal should not be less than 80% when tested on a normal warm wash; some machines didn't reach this score during our test runs.

11 **Overall ratings**
The overall rating comes from combining scores for energy efficiency, water efficiency, gentleness, spin efficiency and soil removal; each factor was weighted equally.

Washing machines

	Brand and model (in rank order)	Manufacturer/ distributor	Origin	Price* ($)	Warranty (years)	Cycle time** (minutes)	Dimensions*** HxWxD (mm)	1 Wash load (claim/tested)	2 Tap connection †	3 Heater	4 Warm wool rinse
	MIELE W698 Hydromatic **(F)** #	Miele	Germany	1999	2	115	850x595x623	5/5	C	✓	
equal	**MIELE** W711 Hydromatic **(F)** #	Miele	Germany	1999	2	110	850x595x623	5/5	C	✓	
	THOR L692RX **(F)**	Healco	Italy	1495/1695	2 *(A)*	60	850x595x600	6/6	C/H&C		✓
	AEG Öko Lavamat 600 **(F)** #	Andico	Germany	1709/1959	3	100	850x595x635	5/5	C/H&C	✓	
equal	**ASKO ASEA** 12003 **(F)**	Asko	Sweden	1589/1669	2 *(B)*	65	820x600x620	4.5/4.5	C/H&C	✓	
	BOSCH WFM 3010 **(F)**	Robert Bosch	Germany	1895/1999	2	135	845x600x600	5/5	C/H&C	✓	
equal	**BENDIX** L43RX **(F)** #	Healco	Italy	1120/1399	1	85	850x595x573	5/5	C/H&C	✓	
	BENDIX L105RX **(F)** #	Healco	Italy	1445/1739	1	95	850x595x573	5/5	C/H&C	✓	
	WHIRLPOOL 6AWG384 **(F)** #	Whirlpool	Italy	1035	2 *(C)*	65	845x595x525	4.5/4.5	H&C	✓	
equal	**BENDIX** PCA 84E **(TF)** #	Healco	Italy	1295/1379	1	70	870x450x625	*(L)*/4	C/H&C	✓	
	OMEGA CW1100/2 **(F)**	Omega	Italy	1349/1599	2	85	840x590x510	4.5/4.5	H&C	✓	
	BOSCH WMV4280 **(F)** #	Robert Bosch	Spain	1386/1459	2	120	852x593x550	4.5/4.5	C/H&C	✓	
equal	**GORENJE PACIFIC** PS99 **(F)**	Gorenje	Yugoslavia	639/739	1 *(D)*	45	850x600x600	4.5/4.5	C/H&C		
	HOOVER Electra 540 **(F)**	Hoover	Australia	869/948	2	50	855x584x563	4/4	C/H&C		✓
	HOOVER Electra 545 **(F)** #	Hoover	Australia	929/999	2	50	855x584x563	4/4	C/H&C	✓	✓
	IGNIS 6AWL305 **(F)** #	Whirlpool	Italy	799/869	1 *(E)*	55	845x600x515	4.5/4.5	C	✓	
	WHIRLPOOL 6AWG354 **(F)** #	Whirlpool	Italy	948/1099	2 *(C)*	55	850x595x525	4.5/4.5	H&C	✓	
	FISHER & PAYKEL Smart Drive GW700 #	Fisher & Paykel	NZ	1024/1100	2	45	1005x650x675	7/7	H&C		✓
equal	**FISHER & PAYKEL** Smart Drive GW500 #	Fisher & Paykel	NZ	845/900	2	35	985x560x585	5/5	H&C		✓
	FISHER & PAYKEL Smart Drive GW600 #	Fisher & Paykel	NZ	954/1000	2	40	990x600x625	6/6	H&C		✓
	HITACHI PAF 1220P	Hitachi	Japan	840/948	3	35	1035x610x600	5.5/5.5	H&C		
equal	**HITACHI** PAF 1260PX	Hitachi	Japan	880/944	3	35	1020x610x610	5.5/5.5	H&C		
	HITACHI SAF 2000PX #	Hitachi	Japan	1119/1324	3	60	935x610x615	7/6	C/H&C		
	SANYO ASW 602AP #	Sanyo	Japan	879/1099	1	50	910x570x590	6/6	H&C		
	SIMPSON Concorde 36C527S	Email	Australia	669/899	2 *(G)*	40	1050x575x630	4.5/4.5	C/H&C		✓
	SIMPSON Deluxe 36C526S	Email	Australia	679/729	2 *(G)*	40	1050x575x630	4.5/4.5	C/H&C		✓
	SIMPSON Genesis 36D525S	Email	Australia	618/699	2 *(G)*	40	1050x575x630	4.5/4.5	C/H&C		✓
	SIMPSON Genesis 36D528S	Email	Australia	765/835	2 *(G)*	40	1050x575x630	4.5/4.5	C/H&C		✓
	SIMPSON Riviera 36D427S	Email	Australia	699	2 *(G)*	40	1050x575x630	4.5/4.5	C/H&C		
	WESTINGHOUSE Laundromat LD555S	Email	Australia	699/704	2 *(G)*	40	1050x575x630	4.5/4.5	C/H&C		
	HITACHI SAF 1020PX	Hitachi	Japan	750/799	3	35	1010x570x570	4.5/4.5	H&C		
equal	**ADMIRAL** 510	Hoover	Australia	599/680	2	40	990x600x650	5/5	C/H&C		
	ADMIRAL 5100	Hoover	Australia	699/769	2	40	990x600x650	5/5	C/H&C		
	HOOVER Commodore 792	Hoover	Australia	659/699	2	40	990x600x650	5/5	C/H&C		
	HOOVER Galaxy 784	Hoover	Australia	679/750	2	40	990x600x650	5/5	C/H&C		
	HOOVER Premier 750	Hoover	Australia	679/720	2 *(H)*	40	990x600x650	5/5	C/H&C		
	HOOVER Premier 770	Hoover	Australia	749/833	2 *(H)*	40	990x600x650	5/5	C/H&C		
	HOOVER 800	Hoover	Australia	799/869	2 *(J)*	40	990x600x650	5/5	C/H&C		
	HOOVER 900	Hoover	Australia	799/899	2 *(K)*	40	990x600x650	5/5	C/H&C		
	HOOVER 972	Hoover	Australia	845/949	2 *(K)*	40	990x600x650	5/5	C/H&C		
	HOOVER 1000	Hoover	Australia	899/1029	2 *(H)*	40	990x600x650	5/5	C/H&C		
	HOOVER Commodore DEL 892	Hoover	Australia	698/850	2	40	990x600x650	5/5	C/H&C		
	HOOVER Galaxy MSE 884	Hoover	Australia	829	2	40	990x600x650	5/5	C/H&C		
	HOOVER Gemini MSE 894	Hoover	Australia	794	2	40	990x600x650	5/5	C/H&C		
	OMEGA CW505/2 **(F)**	Omega	Italy	999/1290	2	65	850x600x530	4.5/4.5	C/H&C	✓	

Note: All the Simpson models reported on have been renumbered since our last report, but Simpson assures us they're the same machines.

# These models (new this time or from last January's test) were tested for their ability to cope with an out-of-balance load, and for the amount of lint they left on clothes — see the main article for results.

F front loader; all others are top loaders.

TF Top-loading with front loader action.

* Prices shown indicate the range found in nationwide checks in July 1993. Price includes installation for the AEG, Asko Asea, Bendix, Bosch, Hoover (front loader Kleenmaid, Maytag, Miele and Thor washing machines.

** 'Normal' cycle time rounded to nearest five minutes; the cycle time of machines with a heater will vary slightly depending on the temperature of the intake water.

*** Dimensions may vary from those shown due to plumbing requirements. If space is limited make sure you have allowed for plumbing.

† **H&C** — must be connected to hot and cold water. **C/H & C** — may be connected to ho and cold water or cold only. **C** — cold water connection only; machine heats water.

†† Total water used on normal cycle (litres).

ncy	7	8	9	10	11	Brand and model (in rank order)	
	Energy efficiency (%)	Gentleness (%)	Spin efficiency (%)	Soil removal (%)	Overall rating (%)		
	89	92	74	87	82	**MIELE** W698 Hydromatic **(F)** #	
	90	89	73	85	81	**MIELE** W711 Hydromatic **(F)** #	equal
	86	85	80	85	81	**THOR** L692RX **(F)**	
	88	90	70	80	79	**AEG** Öko Lavamat 600 **(F)** #	
	83	89	70	84	78	**ASKO ASEA** 12003 **(F)**	equal
	85	86	73	85	78	**BOSCH** WFM 3010 **(F)**	
	83	95	63	82	77	**BENDIX** L43RX **(F)** #	equal
	85	90	68	83	77	**BENDIX** L105RX **(F)** #	
	88	90	69	71	74	**WHIRLPOOL** 6AWG384 **(F)** #	
	87	90	66	69	72	**BENDIX** PCA 84E **(TF)** #	equal
	80	81	66	86	72	**OMEGA** CW1100/2 **(F)**	
	82	89	47	87	71	**BOSCH** WMV4280 **(F)** #	
	82	87	42	78	70	**GORENJE PACIFIC** PS99 **(F)**	equal
	80	91	55	83	70	**HOOVER** Electra 540 **(F)** *(A)*	
	80	91	55	83	70	**HOOVER** Electra 545 **(F)** *(A)* #	
	88	89	41	69	70	**IGNIS** 6AWL305 **(F)** #	
	87	89	46	69	70	**WHIRLPOOL** 6AWG354 **(F)** #	
	65	77	77	83	69	**FISHER & PAYKEL** Smart Drive GW700 #	
	66	79	71	82	68	**FISHER & PAYKEL** Smart Drive GW500 #	equal
	66	77	74	82	68	**FISHER & PAYKEL** Smart Drive GW600 #	
	72	72	62	79	68	**HITACHI** PAF 1220P	
	72	69	52	87	67	**HITACHI** PAF 1260PX	equal
	77	72	62	85	67	**HITACHI** SAF 2000PX #	
	78	73	57	81	67	**SANYO** ASW 602AP #	
	66	72	69	85	67	**SIMPSON** Concorde 36C527S	
	66	72	69	85	67	**SIMPSON** Deluxe 36C526S	
	66	72	69	85	67	**SIMPSON** Genesis 36D525S	
	66	72	69	85	67	**SIMPSON** Genesis 36D528S	
	66	72	69	85	67	**SIMPSON** Riviera 36D427S	
	66	72	69	85	67	**WESTINGHOUSE** Laundromat LD555S	
	74	68	62	82	66	**HITACHI** SAF 1020PX	
	65	62	64	88	65	**ADMIRAL** 510	equal
	65	62	64	88	65	**ADMIRAL** 5100	
	65	62	64	88	65	**HOOVER** Commodore 792	
	65	62	64	88	65	**HOOVER** Galaxy 784	
	65	62	64	88	65	**HOOVER** Premier 750	
	65	62	64	88	65	**HOOVER** Premier 770	
	65	62	64	88	65	**HOOVER** 800	
	65	62	64	88	65	**HOOVER** 900	
	65	62	64	88	65	**HOOVER** 972	
	65	62	64	88	65	**HOOVER** 1000	
	65	62	64	88	65	**HOOVER** Commodore DEL 892	
	65	62	64	88	65	**HOOVER** Galaxy MSE 884	
	65	62	64	88	65	**HOOVER** Gemini MSE 894	
	85	87	31	75	65	**OMEGA** CW505/2 **(F)**	

(continued overleaf)

(A) Five years parts on transmission and cabinet, 10 years on stainless steel parts.
(B) 10 years on stainless steel parts, 20 years on Pex hose.
(C) Five years on gearcase assembly, 10 years on outer tub.
(D) Four years on motor.
(E) Five years parts on gearcase assembly.
(G) Five years parts on transmission and bowl.
(H) Five, 10 and 20 years parts only for various parts of transmission, cabinet and bowl.
(J) Five years parts on top and lid.
(K) Five years parts only on top, lid, cabinet and transmission assembly.
(L) 3.2 kg stated on machine, 5 kg in instructions.

Washing machines (continued)

								1	2	3	4
	Brand and model (in rank order)	**Manufacturer/ distributor**	**Origin**	**Price*** ($)	**Warranty** (years)	**Cycle time**** (minutes)	**Dimensions***** **HxWxD** (mm)	**Wash load** (claim/tested)	**Tap connection †**	**Heater**	**Warm wool rinse**
equal	**ADMIRAL** 6005	Hoover	Australia	739/799	2	45	1080x660x690	6/6	C/H&C		✓
	ADMIRAL 6100	Hoover	Australia	875/929	2	45	1080x660x740	6/6	C/H&C		✓
	HOOVER 1500 #	Hoover	Australia	1099/1238	2 *(K)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER 1400	Hoover	Australia	959/1059	2 *(M)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER 1420	Hoover	Australia	969/1099	2 *(M)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER 1300	Hoover	Australia	869/999	2 *(N)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER Commander 1240A	Hoover	Australia	799/929	2 *(J)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER Commander 1340	Hoover	Australia	829/999	2 *(J)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER Elite 1205	Hoover	Australia	749/799	1	45	1080x660x740	6/6	C/H&C		✓
	HOOVER Elite 1210	Hoover	Australia	799/884	2	45	1080x660x740	6/6	C/H&C		✓
	HOOVER Elite 1220	Hoover	Australia	899/949	2	45	1080x660x740	6/6	C/H&C		✓
	HOOVER Elite 1225	Hoover	Australia	1010/1158	2	50	1080x660x740	6/6	C/H&C	✓	✓
	HOOVER Galaxy 1260	Hoover	Australia	779/999	2 *(J)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER Galaxy LSE 1360	Hoover	Australia	850/995	2 *(J)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER Gemini 1290	Hoover	Australia	749/899	2 *(J)*	45	1080x660x690	6/6	C/H&C		✓
	HOOVER Gemini LSE 1390	Hoover	Australia	849/969	2 *(J)*	45	1080x660x690	6/6	C/H&C		✓
	SIMPSON Contessa 36C425P	Email	Australia	620/639	2 *(G)*	40	1050x575x630	4/4	C/H&C		✓
	SIMPSON Delta 36D422P	Email	Australia	579/628	2 *(G)*	40	1050x575x630	4/4	C/H&C		
	SIMPSON Genesis 36D524P	Email	Australia	599/679	2 *(G)*	40	1050x575x630	4/4	C/H&C		✓
	SIMPSON Riviera 36D426P	Email	Australia	620/639	2 *(G)*	40	1050x575x630	4/4	C/H&C		
	WESTINGHOUSE Laundromat LD425P	Email	Australia	644	2 *(G)*	40	1050x575x630	4/4	C/H&C		
equal	**HOOVER** Gemini 794A	Hoover	Australia	699/792	2	40	1000x600x650	4/4	C/H&C		
	HOOVER Premier 710	Hoover	Australia	629/668	2	40	1000x600x650	4/4	C/H&C		
	HOOVER Premier 705	Hoover	Australia	579/638	1	40	1000x600x650	4/4	C/H&C		
equal	**KLEENMAID** KAW 693 #	Kleenmaid	USA	1180/1299	3 *(S)*	35	1090x650x710	7/5.5	H&C		✓
	MAYTAG A9400 #	Hoover	USA	1495/1599	5 *(P)*	30	1120x648x680	5/5	C/H&C		
	MAYTAG A9800	Hoover	USA	1690/1745	5 *(P)*	30	1120x648x680	5/5	C/H&C		✓
	ADMIRAL 1410B	Hoover	USA	1048	2 *(Q)*	40	1117x690x690	7/5	H&C		✓
	IGNIS 6MAX5133	Whirlpool	USA	919/999	1 *(E)*	30	1090x685x650	5.5/5	H&C		
equal	**AMERICANA** AW9830	MEA	Canada	889/995	1	40	1085x685x650	5/5	H&C		
	GENERAL ELECTRIC WWA6513	MEA	Canada	924/939	2 *(R)*	40	1080x686x635	5/5	H&C		
	GENERAL ELECTRIC WWA9067	MEA	Canada	1000/1059	2 *(R)*	40	1080x686x635	5/5	H&C		
	GENERAL ELECTRIC WWA9570	MEA	Canada	1159/1195	2*(R)*	40	1080x686x635	5/5	H&C		
	IGNIS 6MAL5143	Whirlpool	USA	819/949	2 *(E)*	30	1060x610x660	4/4	H&C		

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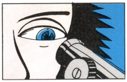
#	These models (new this time or from last January's test) were tested for their ability to cope with an out-of-balance load, and for the amount of lint they left on clothes — see the main article for results.
F	front loader; all others are top loaders.
TF	Top-loading with front loader action.
*	Prices shown indicate the range found in nationwide checks in July 1993. Price includes installation for the AEG, Asko Asea, Bendix, Bosch, Hoover (front loaders), Kleenmaid, Maytag, Miele and Thor washing machines.
**	'Normal' cycle time rounded to nearest five minutes; the cycle time of machines with a heater will vary slightly depending on the temperature of the intake water.
***	Dimensions may vary from those shown due to plumbing requirements. If space is limited make sure you have allowed for plumbing.
†	**H&C** — must be connected to hot and cold water. **C/H & C** — may be connected to hot and cold water or cold only. **C** — cold water connection only; machine heats water.
††	Total water used on normal cycle (litres).

(E)	Five years parts on gearcase assembly.
(G)	Five years parts on transmission and bowl.
(J)	Five years parts on top and lid.
(K)	Five years parts only on top, lid, cabinet and transmission assembly.
(M)	Five years parts on cabinet and transmission.
(N)	Five years parts on top and lid.
(P)	10 years parts on transmission.
(Q)	10 years parts on some parts.
(R)	Five years parts on cabinet, 10 years on gearbox.
(S)	Five years parts on cabinet (rust from inside out), 10 years on transmission, 20 years on stainless steel tub.

	7	8	9	10	11		
ncy	Energy efficiency (%)	Gentleness (%)	Spin efficiency (%)	Soil removal (%)	Overall rating (%)	Brand and model (in rank order)	
	73	74	41	86	64	**ADMIRAL** 6005	equal
	73	74	41	86	64	**ADMIRAL** 6100	
	73	74	41	86	64	**HOOVER** 1500 #	
	73	74	41	86	64	**HOOVER** 1400	
	73	74	41	86	64	**HOOVER** 1420	
	73	74	41	86	64	**HOOVER** 1300	
	73	74	41	86	64	**HOOVER** Commander 1240A	
	73	74	41	86	64	**HOOVER** Commander 1340	
	73	74	41	86	64	**HOOVER** Elite 1205	
	73	74	41	86	64	**HOOVER** Elite 1210	
	73	74	41	86	64	**HOOVER** Elite 1220	
	73	74	41	86	64	**HOOVER** Elite 1225	
	73	74	41	86	64	**HOOVER** Galaxy 1260	
	73	74	41	86	64	**HOOVER** Galaxy LSE 1360	
	73	74	41	86	64	**HOOVER** Gemini 1290	
	73	74	41	86	64	**HOOVER** Gemini LSE 1390	
	63	71	63	85	64	**SIMPSON** Contessa 36C425P	
	63	71	63	85	64	**SIMPSON** Delta 36D422P	
	63	71	63	85	64	**SIMPSON** Genesis 36D524P	
	63	71	63	85	64	**SIMPSON** Riviera 36D426P	
	63	71	63	85	64	**WESTINGHOUSE** Laundromat LD425P	
	58	64	64	89	62	**HOOVER** Gemini 794	equal
	58	64	64	89	62	**HOOVER** Premier 710	
	58	64	64	89	62	**HOOVER** Premier 705	
	65	82	47	71	61	**KLEENMAID** KAW 693 #	equal
	59	79	47	82	61	**MAYTAG** A9400 #	
	59	79	47	82	61	**MAYTAG** A9800	
	58	81	59	76	61	**ADMIRAL** 1410B	
	61	77	49	79	60	**IGNIS** 6MAX5133	
	57	72	55	83	59	**AMERICANA** AW9830	equal
	63	75	42	84	59	**GENERAL ELECTRIC** WWA6513	
	63	75	42	84	59	**GENERAL ELECTRIC** WWA9067	
	63	75	42	84	59	**GENERAL ELECTRIC** WWA9570	
	59	74	40	79	57	**IGNIS** 6MAL5143	

The three Fisher & Paykel models were the top-performing top loaders (with the Hitachi PAF 1220P), with particularly impressive spin efficiency and gentleness scores for that kind of washing machine.



FROM OUR LAB

NO-FLAME, NO WORRIES?

A DO-IT-YOURSELF flame-retarding treatment, **NO-FLAME Fabric and Textile spray**, overstepped the mark when it claimed it is "more than a smoke alarm — a fire prevention system". Given its limited applications and the many kinds and causes of fires in homes, you shouldn't rely on this product alone. It is certainly no substitute for a smoke alarm.

By definition, a flame retardant is something which suppresses or delays the spread of flame on materials treated with it, under certain conditions. Don't confuse it with a *fire* retardant, which should also suppress other types of combustion, such as the spread of smouldering.

NO-FLAME claims to stop dry, porous materials around the home — such as soft furnishings, curtains, blankets, carpets — from catching fire, but is stated not to be effective on non-porous materials, like vinyl, painted or varnished wood and plastic.

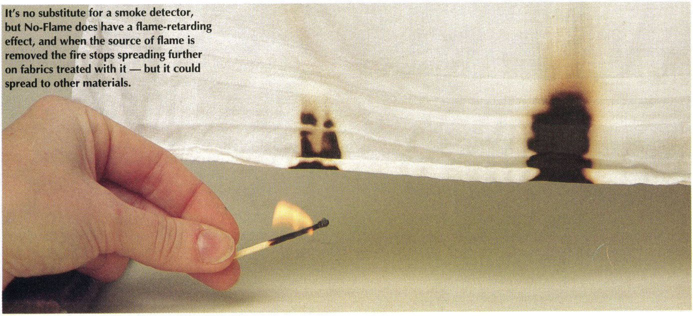
We tested NO-FLAME on a range of fabrics and furnishings and found it did have some flame-retarding effect. Cotton materials treated with the product either burnt slowly or didn't catch fire, while a cushion (polyester filling with a polycotton cover) and upholstery fabric burnt more slowly than when untreated. However, it didn't stop the upholstery fabric, which had a synthetic component, from releasing clouds of black, acrid smoke as it smouldered. We also found its effectiveness varied on different samples of the same material, possibly depending on how evenly it was applied.

NO-FLAME is an aerosol spray, so it's easy and convenient to use. Best results are claimed to be achieved by using two or three light applications, and lined materials like curtains must be treated on both sides, so if you're covering a large area it works out quite expensive — we paid $9 for one can a few months ago, but we've seen it on sale for $14.95. As it's water-soluble, you have to reapply it if the treated item is washed.

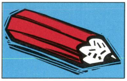
However, our main concern about the product is with the claims made for it. The major claims made for NO-FLAME's performance are: "When used as directed, treated materials cannot catch fire", and "More than a smoke alarm ... a fire prevention system". We believe these claims are exaggerated and the latter, in particular, could be misleading. The product clearly will not prevent all fires starting and won't stop them spreading to non-porous materials. We believe it cannot take the place of a smoke detector. We have pointed this out to the company which markets NO-FLAME, Flamesafe, and it has since told us it has changed the wording on the can.

The label also claims the product has been independently tested and complies with the Australian Standard AS 1530. However, this Standard — which covers methods for testing combustibility of building materials and structures — doesn't set out any performance or effectiveness requirements relevant to this kind of product, so this claim is also misleading.

While NO-FLAME may have some uses around the house as part of an overall fire strategy, it would be a better idea to minimise the risk of fire in your home — installing smoke alarms and having your electric wiring checked are two good places to start. ❑



It's no substitute for a smoke detector, but No-Flame does have a flame-retarding effect, and when the source of flame is removed the fire stops spreading further on fabrics treated with it — but it could spread to other materials.



WHAT DO YOU KNOW?

1 What part of a 'self-cleaning' oven makes it clean?
A) The fan forcing.
B) The enamel-coated panels.
C) Stainless steel surfaces.
D) Natural gas.

2 What fruit is known as the 'tree tomato'?
A) Apple.
B) Tamarind.
C) Tamarillo.
D) Whortleberry.

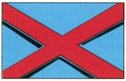
3 What is 'pet dander'?
A) An effeminate pet.
B) A recyclable form of latex.
C) A handkerchief containing sinus herbs and held close to the nose.
D) A protein-like substance shed from the coats of cats and dogs.

4 DAT, DCC and MD are all types of:
A) Government consumer affairs department.
B) Rap band.
C) Digital sound recording system.
D) University degree in environmental science.

5 In June McCain Foods was fined $500 for breaching the Food Standards Code in respect of its 'Healthy Choice low-fat, low-cholesterol, low-sodium' lamb dinner. What was wrong?
A) The meal contained insufficient lamb.
B) There was too much salt.
C) It wasn't lamb, but mutton.
D) It contained cholesterol.

ANSWERS

1. B. The panels are coated with a special enamel which helps the oven clean itself by using a combination of heat and oxidation.
2. C. Tamarillo has a dark red or yellow skin and firm orange or red flesh with purple seeds.
3. D. Pet dander is an allergen which may upset those with asthma or other respiratory problems.
4. C. DAT stands for Digital Audio Tape, DCC stands for Digital Compact Cassette, and MD for MiniDisc.
5. B. The meal was found to have a sodium level of 1.6 g/kg, whereas the maximum permitted in a 'low-sodium' meal is 1.2 g/kg.



RECALLS AND BANS

If you find a recall or ban not on our list please let us know.

Frito-Lay Australia has recalled **50 g RUFFLES PLAIN POTATO CHIPS, 200 g RUFFLES PLAIN POTATO CHIPS, 250 g TWIN PACK RUFFLES PLAIN POTATO CHIPS** (use by date September 25, 1993) as they might contain broken glass. Do not eat. Return to Frito-Lay for refund, 15–21 Britton Street, Smithfield 2164. Phone 008 024 074 for more information.

GREEN'S 500 g DESICCATED COCONUT (use-by date June 24, 1994, batch numbers 3175A and 3175D) and **SANITARIUM 250 g DESICCATED COCONUT** (use-by date June 16, 1994) have been recalled by the importer due to possible bacterial contamination. Return to retailer.

Aquatas has recalled **AQUATAS COLD SMOKED SALMON AND TROUT** (several batches produced in June 1993) as they may contain low levels of the bacteria *Listeria monocytogenes* — which may cause flu-like symptoms in pregnant women, the elderly, babies and people with low immunity. If you have eaten this product and developed flu-like symptoms, see your doctor. Return product to retailer for refund. Note: infection with listeria can cause miscarriage.

Westernport Canneries has recalled **3 kg CATERING PACKS (CANNED) SPC** and **ADMIRAL WHOLE NEW POTATOES** (manufactured March 1993). Affected cans are stamped on the base with one of these codes: E310 P 3080 A (or P), E310 P 3076 A (or P), E310 P 3077 A (or P), E310 P 3082 A (or P), E310 P 3074 A (or P), E310 P (3 other digits) A (or P). Do not serve or eat. Phone 008 806 193 to arrange collection and reimbursement.

Backwell IXL has recalled **HAAN BY IXL ROOM HEATERS** (made up to June 17, 1993, and sold in 1993), as a fault in the thermal overload switch could possibly result in the product overheating and cause a fire in the unit. Do not use heater until checked. Call 008 641 778 to arrange service. Affected heaters are:
Portable heaters: 73053 Turbo III, 73063 Turbo III T, 73083 Quantum II, 73093 Ultimate, 73095 Ultimate T.
Wall mounted or recessed heaters: 73993 Ultimate R, 73995 Ultimate RT, 76020 Regal 35, 76025 Regal 35T, 76920 Regal 35R, 76925 Regal 35RT, 76030 Deluxe 45, 76035 Deluxe 45T, 76930 Deluxe 45R, 76935 Deluxe 45RT, 76060 Royale 60, 76065 Royale 60T, 76040 Super 70, 76045 Super 70T.

Edwilkham has recalled **MANDY MARTIN LOLLIPOPS** distributed in Australia in packs of 40 and 100 with use-by dates of December 1994, January 1995 and February 1995, as the product was found to contain metal shavings. Do not eat.

Toyota has recalled **TOYOTA HILUX** and **4-RUNNER VEHICLES** (diesel engines), produced between August 29, 1988, and March 29, 1993, as at high speeds and under certain road conditions (such as a corrugated road surface) engine vibration can cause the front engine hanger to vibrate and potentially crack or break. In the worst case the broken section could lodge in the accelerator link and bind the accelerator pedal. Contact your nearest Toyota dealer to arrange inspection. Affected vehicles are:

Model	**Frame number range**	
LN85R	JT7 31LN85	08000002–08005263
	JT7 33LN85	08000002–08005263
LN86R	JT7 31LN86	09000002–09003484
	JT7 33LN86	09000002–09003484
LN106R	JT7 31LNA6	09000002–09025312
	JT7 33LNA6	09000002–09025312
LN107R	JT7 33LNA3	09000002–09001055
LN111R	JT7 32LNB1	09000002–09001627
LN130R	JT7 11LND2	08000003–08002899

Bi-Lo Cheap Groceries has recalled **BONE CHINA MUGS (CAT. NO. 697037)** as the mug may shatter when filled with boiling water. Contact Bi-Lo.

SAFETY NOTIFICATION

CIG has issued a safety warning for the **AIR-VIVA 2 RESUSCITATOR** (with a white semi-opaque silicon bag) as in one case the intake valve came adrift prior to use, rendering the resuscitator temporarily inactive. Owners should carry out immediate testing as per Air-Viva 2 amended procedures in new operating instructions (page 5). Call your local CIG Health Care office to obtain a copy as a matter of urgency.

PLEASE SEND US

■ change of address ■ renewal
■ subscription inquiries
Just write to:
The Subscription Section
Australian Consumers' Association
57 Carrington Road, Marrickville 2204.
or phone **(02) 558 8088**

TWELVE MONTH INDEX

OCTOBER 1992 — SEPTEMBER 1993

(T) test
(D) includes assessment of suitability for those with disabilities
(F) feature — general advice
(M) feature — includes market information
(S) subscriber survey or user trial
(C) Consumer in law
(L) letter
(U) update of previous report
*** additions or corrections to reports, small follow-up items**

Air conditioners, reverse-cycle Nov(T,D)
Air quality, indoor Jan(F)
Allergies Nov(F)
Answering machines Oct(T)
Antibiotics Aug(F)
Arthritis Oct(F),May(L)
Asthma management May(F)
Audio equipment
  CD players, multi-disc Mar(T)
  digital recording Jun(M)
Australian-made labelling Jan(F)
Barbecues, kettle Jan(T)
Batteries, car Sep(T)
Beer, reduced-alcohol Apr(T)
Bicycle helmets Oct(T)
Bicycles, hybrid Aug(T,S)
Blenders, handheld Nov(T,D)
Breast cancer Jan(F)
Buying guide, annual Dec
Cameras, compact Feb(T)
Carpets
  stain-resistance treatments Nov(T)
Cars
  batteries Sep(T)
  child restraints Apr(M)
  clamping and tow-away Feb(C)
  insurance Dec(S)
CD players, multi-disc Mar(T)
Child car restraints Apr(M)
Cigarettes, low-tar Aug(T)
Clothes labelling Apr(C)
Coffee bags Oct(S)
Computer printers Mar(T)
Computers, notebook Dec(T)
Cordless phones Dec(T,D)
Cosmetics, animal testing Mar(M)
Credit cards Feb(F)
Debt harassment Jul(C)
Desserts, frozen Dec(T)
Detergents, laundry Mar(T)
Digital recording Jun(M)
Dishwashers Feb(T,D)
Drills, impact Aug(T,D)
Economic jargon explained Oct(F)
Energy, renewable Sep(F)
Environment quiz May(F)
Flame-retardant spray Sep(T)
Food
  coffee bags Oct(S)
  frozen desserts Dec(T)
  fruit substitutes for kids Mar(T)
  grains and cereals Jun(F)
  packaged meals for kids Feb(M)
  pasta, 'fresh' Jul(T)
  yoghurt Nov(T)
Gas heaters, flued Apr(T,D)
Glues Jul(M)
Grains and cereals Jun(F)
Greenhouse effect Oct(F)
Hair and hair products Jan(F)
Handheld blenders Nov(T,D)
Health insurance Nov(M)
Heaters, gas flued Apr(T,D)
Heating, home May(F)
Helmets, bicycle Oct(T)
High chairs Jul(T,D)
Hiring tradespeople Jul(F)
Home heating May(F)
Hybrid bikes Aug(T,S)
Impact drills Aug(T,D)
Index, four-year Jun
In-line skates Dec(T)
Indoor air quality Jan(F),Mar*
Insulation Apr(F)
Insurance
  car Dec(S)
  claims Aug(C)
  health Nov(M)
  life Sep(M)
Investing in property Jul(F)
Jargon, economic Oct(F)
Labelling
  Australian-made Jan(F)
  clothes Apr(C)
Laundry detergents Mar(T)
Legal advice, by phone Nov(C)
Life insurance Sep(M)
Light bulbs, long-life Jun(T)
Low-tar cigarettes Aug(T)
Mattresses Aug(M)
Minerals and vitamins Sep(F)
Notebook computers Dec(T)
Ovens, electric wall Jun(T,D)
Pasta, 'fresh' Jul(T)
Pay TV Oct(F),Feb(L)
Perfume May(T)
Phone advice, legal Nov(C)
Phones, cordless Dec(T,D)
Pool fences Dec(F),May(L)
Printers, computer Mar(T)
Product recalls and bans May(C)
Property, investing in Jul(F)
Recycling Apr(F)
Reduced-alcohol beer Apr(T)
Refrigerators
  350-400 litre May (T)
Renewable energy sources Sep(F)
Reverse-cycle air conditioners Nov(T,D)
Savings plans Mar(F)
Secateurs Oct(S),Feb(L)
Security screen doors Sep(F)
Sewing machines Apr(T,D)
Shade materials Jan(F)
Shampoo vacuum cleaners May(T,D)
Skates, in-line Dec(T)
Slimming programs Jun(M)
Standards Australia Dec(F),Feb(L)
Sun protection Jan(F)
Superannuation guarantee Feb(F),Jul*
Supermarket survey Jul(S)
Supermarket trading terms Jun(F)
Tax, rights and obligations Mar(C)
Telecommunications Feb(M)
Televisions
  pocket-sized May(T)
  portable Apr(T,D)
TV, pay Oct(F),Feb(L)
Vacuum cleaners, shampoo May(T,D)
Vets' fees Nov(F),Jan(L),Feb(L)
Video recorders Mar(T)
Vitamins and minerals Sep(F)
Wall ovens, electric Jun(T,D)
Washing machines Jan(T,D),Mar*,Sep(T,D)
Water heaters Aug(T,S)
Water filters Feb(T),Sep(U)
Yoghurt Nov(T,F)

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ght in rage (mm)	2 Number of continuous speeds	3 Pulse feature	4 Noise (dB)	5 Ease of use score (%)	6 Food-handling score (%)	7 Overall score (%)	Brand/model (in rank order)
7	1	✓	88	73	87	80	**PHILIPS** HR-2817
0	On/off		87	77	79	78	**BREVILLE** BLR-1
0	2	✓	86	78	78	78	**BREVILLE** BLR-2
0	4	✓(3 speeds)	87	67	80	74	**BREVILLE** BLE70G
2	On/off		83	77	71	74	**PANASONIC** MX T100PP
5	5	✓	83	70	77	74	**PANASONIC** MX T30GP
3	2	✓	84	72	66	69	**RALTA** R90120
8	1	✓	82	59	68	64	**TIFFANY** BL 150
7	2	✓	82	64	54	59	**RONSON** 8339

1 Height in storage This is the height of the jug when removed from the motor base. A standard bottom cupboard is 350 mm high. The **PANASONIC MX T100PP** can be put away in a standard cupboard when assembled.

2 Number of continuous speeds Some models just have an on/off switch; others have a range of speeds, sometimes allocated numbers, sometimes given names such as chop, whip and so on. More speeds don't necessarily give a better result.

3 Pulse feature This feature gives a short burst from the motor. It is an effective way of dealing with hard foods and gives more control when blending delicate foods.

4 Noise While none of the blenders was quiet, the **PHILIPS** and the **BREVILLEs** were the noisiest.

5 Ease of use score This was calculated from the following assessments:

- Instructions (how easy were they to follow? Did they provide adequate safety precautions? and so on).
- Controls.
- Ease of assembly of the different parts, such as the jug and motor base, the lid insert into the lid and so on.
- Ease of pouring.
- Stability.
- Cleaning.

6 Food handling We tested each blender with a wide variety of soft and hard foodstuffs. The tests are described in the main body of the article.

7 Overall score A final score was calculated by giving equal weight to the ease of use and food-handling scores.

BACK TO BASICS

What are blenders best for?
Blenders chop and mix soft foods excellently, so are ideal for making soups, milkshakes and purées.

Can they chop and blend hard foods?
Most blenders can cope with raw vegetables and harder substances such as peanuts. Some claim to mince raw meat; most will crush ice but some suggest adding liquid to protect the blades; some will grind coffee and hard cheese — check the claims before you buy. Blenders are not suitable for very hard foods like nutmeg or lump sugar because they can damage the blades.

Do I need to cut up food first?
It's easier on the machine if you chop up solid foods before blending. Break bread and biscuits up before crumbing; cube cooked meat, and so on.

Can I put food straight from the stove or oven into a blender?
You should always let food cool to at least 80°C before blending, otherwise the blender's plastic container might overheat and distort. Some manufacturers state 60°C. Placing hot liquids into cold glass might cause cracking.

How much can I fill it?
As a rule of thumb, the more liquid in your mixture, the more you can fill the jug. The maximum mark — usually about three quarters full — only applies to liquids, and you should adjust the level lower for solids. Fill to halfway only for semi-solid mixtures of, say, vegetables and liquid; a quarter to half for thicker mixtures such as paté. Dry solids such as coffee or bread are best processed in small amounts and should just cover the blades. Hot foods should only fill the jug to halfway because of the build-up of steam pressure.

What's the best way to clean a blender?
The easiest way is to wash out the jug with warm, sudsy water just after you've used it. You can also part-fill the jug with water and run it briefly to loosen food remains. You can wipe over the base (the part with the motor) but should never immerse it in water. Plastic jugs are not usually dishwasher-proof, but glass ones may be — check the instructions.

How long should I run the blender for?
Blender motors aren't designed to run for long: they are best used for seconds rather than minutes. Manufacturers may specify the maximum length of time a model should run — it's usually between two and four minutes. Short bursts are also often more effective and will process the food more uniformly. Some models have a pulse button which will give short, sharp bursts of action. You should never let the motor labour on thick, heavy mixtures. Instead, add a little water or use the pulse button. With thick mixtures, stop the blender every now and then and scrape food back towards the blades.

WHIP UP A BREAKFAST

Breakfast replenishes your fuel supplies and peps up your metabolism. But what do you do when you can't face a bowl of cereal or even toast in the morning? A smoothie based on low-fat milk, yoghurt and fruit is a healthy alternative — and the ideal way to put a blender to use.

Here's a simple recipe to try: pour a glass of low-fat milk into the blender, followed by half a cup of plain yoghurt, a banana and a tablespoon of wheatgerm. Add a spoon of honey if you like. Blend till smooth.

For a change you can replace the milk with orange juice; or swap the banana for any other fruit you have in the house (melon, peeled and cored apple or strawberries, for example).

CAR CD PLAYERS – ARE THEY ROADWORTHY?

With the ability to play up to 10 hours' worth of your listening favourites, multi-disc car CD players are becoming increasingly popular. We took 11 models for a spin to see how they stacked up.

THE DIGITAL compact disc has revolutionised the way people listen to music in their homes and is poised to do the same for car audio. Those who have become used to the advantages CDs give them at home are wanting the same when they're out driving.

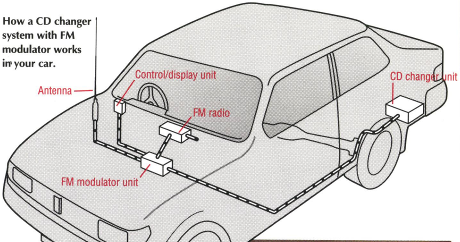
There are two main roads when it comes to car CD players. The most popular at present are the 'in-dash' types, which are self-contained units similar to conventional car cassette players but taking a CD instead. They are installed in place of a cassette player in the dashboard and can come with a radio as part of the system. Their main drawback is that, like cassette players, they only give you a limited amount of music before you have to start fiddling around finding and inserting another disc.

The alternative is a 'CD changer' system. The changer is a shoebox-sized unit that is generally mounted in the boot and holds several CDs in a removable cartridge or magazine. There are three ways one of these can operate in your car:

- If your existing car radio/cassette is fairly new it may be 'CD ready' and accept a CD changer input directly.
- You can buy a dedicated dash-mounted controller that replaces your existing radio/cassette player.
- You can buy a CD changer that comes with an FM modulator, which means it will work with your current car radio. The modulator takes the sound signal from the changer and turns it into an FM radio signal, making it in effect an extra radio station for your radio receiver. This last option is currently the most popular with people buying CD changers as it allows them to keep the radio/cassette player installed in the car.

WHAT WE TESTED

For this report we tested all CD changers with FM modulator units which had a recommended price under $1000 for the complete system. A total of 11 models fitted our criteria and in all but three cases the modulator and changer were sold together. For the **SANYO FXD-C200, SANYO FXD-C100** and **PANASONIC CX DP60EU** the modulator/control unit had to be bought separately.


How a CD changer system with FM modulator works in your car.

All the systems tested comprised a changer unit, FM modulator and a small, illuminated display unit which mounted on the dash with Velcro or similar. Some of the systems provided the controls for the changer on this display unit, others had an infrared remote control (the table overleaf gives details).

BUMPS AND HUMPS – NO PROBLEMS

The obvious difference between listening to CDs in your home and your car is that, generally, your home doesn't roar down a bumpy road at 60 km/h. A car CD player needs to be able to handle bumps, speed humps and potholes without missing a beat. To test this, each model was installed in turn in our test car (a late-model compact hatchback) and driven round a set route over both sealed and unsealed roads. The route included roads of varying surfaces and bumpiness, several varieties of speed hump and all manner of potholes, to simulate typical city and country driving conditions.

We found all the models could handle the rough terrain very well. With most it took an extremely sharp bump to make them mistrack at all and four of them, the **SONY CDX-A55RF, SONY CDX-A35RF, KENWOOD KDC-C601FM** and **SANYO FXD-C200**, didn't mistrack under any of the jolting we gave them. The table shows the relative immunity to mistracking of the models, but we considered that none of them would give problems with jumping under normal driving conditions.

The display unit is mounted on the dashboard. We preferred models which also had the main controls on this unit, rather than providing only a remote control.

SHINING A LIGHT ON CONTROLS

Being easy to use assumes a greater importance when related to car products. Obviously you'll want to be able to change discs or skip a track or two while you're driving along. To do this safely you need to be able to easily find and then activate the control you want, preferably without having to take your eyes off the road for too long. It's no good having to fiddle around looking for the right button only to glance up and find you're about to park up a tree. We also considered that some form of illumination of the controls was essential when driving at night.

Five of the models tested, the **KENWOOD**, **ALPINE**, **SONY CDX-A55RF**, **SONY CDX-A35RF** and **PANASONIC**, had no built-in illumination for the controls and were therefore excluded from our *What to Buy* list even though some of them performed well in other areas.

HIFI-FO-FUM

Many people find adding a CD player to their home sound system means a significant improvement in what they hear, but is this true for these car systems? The car environment is a difficult one for audio products. The sound has to compete with engine and road noise and car interiors aren't necessarily designed with hifi in mind, so the advantages in quality over tape that CD has to offer may not be fully appreciated in a car.

This was particularly true of these systems, as we found the FM modulator significantly degraded the sound signal coming from the changers. The process of making the signal suitable for radio reception tends to reduce its quality, and means the sort of sound performance associated with home CD players won't be achievable. In fact, the potential performance through the modulator will, in most cases, be only a little better than you could expect from a good-quality car cassette deck. You should also keep in mind that the sound, ultimately, comes from your existing car radio and speakers so the final sound you hear will be limited by the quality of these components and not just the CD system.

MOBILE JUKEBOX

If you don't get a huge increase in sound quality with these systems, what do you get? In essence you get your own private mobile jukebox. Car cassette decks give you the freedom to choose what you listen to but, at most, give you 90 minutes of music before you have to poke around in the glovebox to find another tape. The changers we tested could hold either six or 10 discs at a time, which equates to quite a few hours of listening time, and discs and tracks can be selected with a few button presses.

Most of the models we tested included some of the play features you'd find on a home multi-disc machine (see the table for which players had which features), but we were disappointed to find that none of them allowed you to pre-program a selection of tracks into memory, which we thought would be useful if you were off on a long drive.

The CDs are held in a cartridge which can be removed from the changer. Spare cartridges can be bought, so you could keep several loaded at home with different music selections and install whatever selection took your fancy before you left for a drive. If you have a home multi-disc player you might even be able to use the same cartridge for both. At present there is no standard cartridge so different brands aren't usually compatible. If you have a player at home that uses a cartridge, check before you buy to see if they're compatible.

CONCLUSIONS

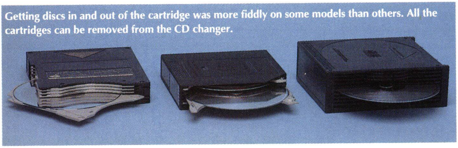
Car CD changers with FM modulators are probably the cheapest way to add a multi-disc CD player to your car if your current radio/cassette doesn't accept a CD input, but don't expect to be blown away by a huge boost in sound quality. The sound will still be limited by the quality of your radio and speakers. All the models we tested performed well. There were no real stand-out units but also no real duds, although models without illuminated controls for night driving are best avoided.

WHAT TO BUY

	SANYO FXD-C200 (CDM-200 modulator)	$898
equal	**BELTEK** MDC-1000	$850
	SANYO FXD-C100 (CDM-100R modulator)	$899
equal	**JUNI** JCD-970	$769
	JVC XL-MG700RF	$949
	PIONEER CDX-FM35	$929

Prices shown are a good target to aim for when shopping around, based on nationwide checks in October 1993. Anything lower is a bargain.

Getting discs in and out of the cartridge was more fiddly on some models than others. All the cartridges can be removed from the CD changer.



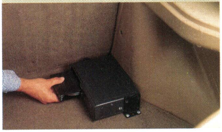
INSTALLATION

INSTRUCTIONS for installation were included with all the models we tested but unless you're very sure of what you're doing, we suggest you get the players professionally installed. Ask the retailer if installation is included in the purchase price — if not you'll be up for around $45 to $140, depending on the sort of car you have and who you get to do the installation.

The most difficult part of installing these units will probably be finding a suitable position to mount the changer securely. The smaller models tested (see the table for changer dimensions) may fit in a large glovebox or under a roomy dashboard, but generally they'd be mounted in the boot or the rear tray of a station wagon. They have to be situated so there's enough room at the front to get the cartridge in and out easily and also leave enough luggage space. All the models we tested could be mounted horizontally or vertically (see photo) to allow some flexibility. Get the installer to show you various options in your car so you can choose a position that'll be most convenient for your needs. If you need to keep boot space free to fit in your golf clubs let the installer know and he or she will probably be able to find an alternative spot.

Something to remember once the model is installed is to update your car insurance. There are no specific premiums for CD players but you should probably increase the overall insured value of you car.

Try out different ways of mounting the changer to find the most convenient position for your boot. All the models we tested could be mounted both vertically and horizontally.



Car CD changers

	Brand/model (in rank order)	Manufacturer/ distributor	Origin	Target price ($)*	Warranty (years)	Disc capacity	1 Changer dimensions – HxWxD (mm)	2 Dash-mounted controls	3 Track shuffle play	4 Overall shuffle play	Track intro play
	SANYO FXD-C200 (CDM-200)	Sanyo	Japan	898 *(A)*	not stated	10	90 x 290 x 190	✓	✓	*(E)*	✓
	KENWOOD KDC-C601FM	Kenwood	Japan	899	1	10	78 x 282 x 178		✓		✓
equal	**BELTEK** MDC-1000	Accessory Warehouses	Japan	850	not stated	10	90 x 290 x 190	✓	✓	*(E)*	✓
	SANYO FXD-C100 (CDM-100R)	Sanyo	Japan	899 *(B)*	not stated	6	63 x 256 x 170	✓ *(D)*	✓	*(E)*	✓
equal	**JUNI** JCD-970	Juni	Korea	769	1	10	90 x 290 x 190	✓	✓	*(E)*	✓
	JVC XL-MG700RF	Hagemeyer	Japan	949	not stated	6	85 x 310 x 205	✓	✓	✓	
	PIONEER CDX-FM35	Pioneer	Japan	929	not stated *(C)*	6	75 x 200 x 300	✓		✓	
	ALPINE 5956	Alpine	Japan	999	1	6	72 x 280 x 185		✓		✓
	SONY CDX-A55RF	Sony	Japan	999	1	10	88 x 305 x 178		✓	✓	✓
	SONY CDX-A35RF	Sony	Japan	899	1	10	88 x 305 x 178	✓			
	PANASONIC CX-DP60EU (CY-RM60)	Panasonic	Japan	998 *(A)*	not stated *(C)*	6	70 x 277 x 161			✓	

* Prices shown are a good target to aim for when shopping around, based on nationwide checks in October 1993.

(A) Modulator/controller and CD changer bought separately; this is the combined price.

(B) Price when modulator/controller and CD changer are offered as a package; when bought separately (as we had to) they may cost more.

(C) Only an overseas warranty was supplied.

(D) Has a remote control as well.

(E) Randomly chooses a disc and then randomly plays all tracks on that disc, rather than true shuffle play across all discs.

WHAT TO LOOK FOR

None of the models we tested had everything we would have wanted in this type of product. The top models in our *What to Buy* list come close, but still lacked some things. To help you decide what you want in a car CD changer here's a list of things we found (or would have found) useful:

- Illuminated controls — a must for night driving.
- Main controls on the dash display unit — we found remote controls to be more of a hindrance than a help. If a remote control is provided, the main controls should also be available from the dash-mounted display unit for convenience (of the models we tested only the **SANYO FXD-C100** had both).
- Ability to eject the cartridge when the ignition is off — as the changer is likely to be mounted in the boot, this saves a lot of frustration (only the **PANASONIC** didn't allow this).
- Power-off memory — remembering what was playing when the ignition went off and starting in exactly the same place when it's turned back on again. Handy when you're in and out of your car a lot, especially with long pieces of classical music.
- Random ('shuffle') play — with up to 10 discs to choose from this is a handy feature.
- Missing disc memory — memorising slots that don't have discs in them saves time searching when your cartridge isn't full.
- User programmable — none of the models tested lets the user program in the track order, but we think it would be useful for long trips.

All models tested could do the following:

- Select a track on a disc.
- Select a disc.
- Display the current track and disc number

All came with mounting brackets and had all the cables and accessories necessary for installation.

Brand and model

The **SANYO FXD-C200, SANYO FXD-C100** and **PANASONIC CX-DP60EU** did not include FM modulators and controls as part of the changer package. For these models we bought the recommended modulator/controller separately. The model number for the appropriate modulator/controller is given in brackets. Those for the two **SANYO** units are interchangeable; both offer the same features and similar performance, but the **CDM-100R** has a remote control as well as dash-mounted controls.

During testing it was noted that the **SANYO FXD-C200, BELTEK** and **JUNI** were very similar models. They provide identical features and functions and look alike. However, the **SANYO FXD-C200** was more stable over bumps than the other two.

1 Changer dimensions

We measured the overall dimensions of the changer units to give you some idea of the boot space they'll take up. Some of the smaller models might fit in a glovebox or parcel tray (see *Installation* on page 43).

2 Dash-mounted controls

Some models supplied infrared remote controls for the changer while others had the controls built into the dash-mounted display unit. We preferred dash-mounted controls as they were more convenient than locating the remote every time you wanted to make an adjustment. They can also be mounted in a good position for fast eye contact.

Repeat a track	Repeat a disc	7 Control illumination	8 Features score (%)	9 Sound quality score (%)	10 Tracking stability score (%)	11 Ease of use score (%)	12 Overall score (%)	Brand/model (in rank order)	
✓	✓	✓	75	83	100	71	80	**SANYO** FXD-C200	
✓			80	79	100	69	79	**KENWOOD** KDC-C601FM	
✓	✓	✓	75	84	85	69	76	**BELTEK** MDC-1000	equal
✓	✓	✓	75	85	75	72	76	**SANYO** FXD-C100	
✓	✓	✓	75	84	70	71	74	**JUNI** JCD-970	equal
		✓	70	94	83	61	74	**JVC** XL-MG700RF	
✓		✓	70	80	73	73	74	**PIONEER** CDX-FM35	
✓	✓		80	89	80	57	73	**ALPINE** 5956	
✓			80	53	100	57	69	**SONY** CDX-A55RF	
			50	59	100	64	67	**SONY** CDX-A35RF	
✓			70	79	83	50	66	**PANASONIC** CX-DP60EU	

3 Track shuffle play

This feature allows the tracks on one disc to be played in a random (shuffled) order.

4 Overall shuffle play

Models with this feature can randomly play tracks across all discs. The **BELTEK, JUNI** and the two **SANYO** models only half-implement this — see footnote *(E)*.

5 Track intro play

Models with this feature can play the first few seconds of each track on a disc in turn. When a track you want comes up you can then hit a button to cancel the intro play and listen from that track on.

6 Disc intro play

This is similar to *Track intro play* except that the first few seconds of the first track on each disc are played, letting you hear what discs are in the cartridge.

7 Control illumination

We considered it essential for night driving to have the main controls illuminated so they are easy to find in the dark. If you're hunting around for the right control you're not concentrating on driving. Models without illuminated controls were excluded from our *What to buy* list.

8 Features score

This is based on the presence of a series of features that we considered made the units generally easier to use. We looked at the following features and how well they were implemented:

- Track searching both forwards and backwards — all models could do this.
- Track and overall shuffle play.
- Track and disc intro play.
- Memorising what was playing when the ignition was turned off ('power-off memory') — they all did this, but the **JUNI, BELTEK** and the two **SANYO** models only remembered the track, which they started playing from the beginning. The other models remembered where they were up to within a track.
- Automatically finding the next available disc — if the cartridge wasn't full all the models, when searching, could detect which slots didn't have discs in them. All of them except the two **SONY** models remembered these unused slots and wouldn't bother to look there again until the cartridge was changed. This saved some time selecting discs.

9 Sound quality

We looked at the sound quality of the system as a whole, including the FM modulator. Because of this they were judged on what we would expect from a good-quality radio rather than the quality you'd expect from a CD player. A good score here means you can expect your CDs to sound good through a quality radio and speakers, but they still fall short of home CD player quality.

10 Tracking stability

We drove the players over a variety of road surfaces and conditions and assessed how well they handled the bumps. We took into account how easy it was to make them jump as well as how long it took to recover once they had mistracked.

11 Ease of use

The controls were assessed for ease of operation for both day and night driving.

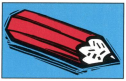
As well as this we looked at the ease of inserting and removing the discs from the cartridge and how easy it was to get the cartridge in and out of the changer. The **PANASONIC** was annoying in that it couldn't eject the cartridge when the car ignition was off.

The quality of the instructions was also assessed; none was poor overall. The instructions for the **ALPINE** and **BELTEK**, however, didn't fully explain all the features of the models.

12 Overall score

The overall score was a combination of performance and ease of use, weighted as follows:

- Features: 20%.
- Ease of use: 40%.
- Tracking stability: 20%.
- Sound quality: 20%.



WHAT DO YOU KNOW?

1 Research has shown that a 30-a-day smoker receives an equivalent annual dose of radiation from smoking to what she/he would get from 300 chest x-rays.
True or false?

2 In food, low cholesterol means low fat.
True or false?

3 Unlike food producers, cosmetics manufacturers don't need to list the product's ingredients on the packaging.
True or false?

4 The body absorbs as much iron from one cup of boiled spinach as it does from one slice of fried lamb's liver.
True or false?

5 In general what percentage of a bottle of full-strength perfume is actually perfume essence?
A) 100%.
B) 75 to 80%.
C) 45 to 55%.
D) 20 to 25%.

Eau de Toilette
Anaïs Anaïs
Cacharel

6 What is a hybrid bicycle?
A) A bicycle with a small solar-powered motor which helps in pedalling.
B) A cross between a mountain bike and a racing bike.
C) The prototype being designed for the 2000 Australian Olympic cycling team.
D) A bicycle designed to be pedalled with the arms as well as the legs.

7 If the words crémant, cuvée, dégorgement and jeroboam cropped up in a conversation you'd probably be talking about...
A) French revolutionary leaders.
B) Soft French cheeses.
C) Contraception methods used in the 18th century.
D) Champagne.

8 In Australia it is estimated that how much oil a year is poured into stormwater drains by do-it-yourself oil changers?
A) 500 000 litres.
B) 1 million litres.
C) 1.5 million litres.
D) 10 million litres.

9 When talking about cameras, SLR stands for...
A) Single loading reel.
B) Single lens reflex.
C) Small, lightweight, reusable.
D) Standard light reading.

CHOICE GUIDE TO
CAMERAS & CAMCORDERS
TESTS ON OVER 150
• COMPACTS
• SLRs
• CAMCORDERS
for performance
convenience
versatility
PLUS
• BEST BUYS
• BETTER PHOTOS
• FILMS ON TEST

RECALLS AND BANS

If you find a recall or ban not on our list please let us know.

The SA Minister of Consumer Affairs has banned from sale in SA all CRADLES THAT CAN TILT MORE THAN FIVE DEGREES. This follows "the deaths of two babies in SA, the causes of which were found to be accidental asphyxiation in their cradles... The babies were found in the angle formed by the side bars and the bases of their tilted, freely rocking cradles."

The importer has recalled KA BLUEY CANDY WITH BUBBLE GUM CENTRE as tests have shown use of blue and red food colourings in excess of permitted levels.

Associated Dairies has recalled BANANA FLAVOURED CRAZY SNACK (use-by date of 7 November) as fragments of a rubber seal have been found in three 125 g product containers. Return to point of purchase for refund.

ANSWERS

1. True. This is because of a radioactive isotope called polonium 210 which is found in the phosphate fertiliser used in growing tobacco. It remains in the tobacco throughout processing and is highly concentrated in tobacco smoke.

2. False. Fats come in various forms and foods which are low in cholesterol may be high in total fat content.

3. False. As from October 1993 all cosmetics, whether imported or manufactured here, must have their ingredients identified in a similar way to food products (although there is a provision for the protection of 'trade secret' ingredients).

4. False. Although these two serves contain about the same amount of iron (4.4 mg), the lamb's liver will provide significantly more as the body more readily absorbs iron from animal products than plants.

5. D. The other 75 to 80% is made up by 90 to 95 proof alcohol.

6. B.

7. D. Crémant is the description for a champagne with a less persistent mousse; cuvée is a mix of several different wines to achieve a desired blend; dégorgement is a process of removing unwanted deposits from the bottle; jeroboam is a three-litre bottle of champagne.

8. C. Oil can be recycled, so take your used oil to a recycling depot. Your local council can probably help you find your nearest one.

9. B.

CHOICE

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